

## **2.0 – INITIAL STUDY CHECKLIST**

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## 2.0 INITIAL STUDY CHECKLIST

### INTRODUCTION

The MND is based on the environmental checklist form presented in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. The checklist form is used to describe the impacts of the proposed Project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures incorporated into the proposed Project.

For this checklist, the following designations are used:

**Potentially Significant Impact:** An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified and cannot be mitigated, an Environmental Impact Report (EIR) must be prepared.

**Less-Than-Significant Impact With Mitigation Incorporated:** An impact that requires mitigation to reduce the impact to a less-than-significant level.

**Less-Than-Significant Impact:** Any impact that would be adverse, but not considered significant.

**No Impact:** The Project would not have any impact.

## 2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a “Potentially Significant Impact” (prior to mitigation) as indicated by the checklist on the following pages.

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Aesthetics                               | <input checked="" type="checkbox"/> Agriculture Resources              | <input checked="" type="checkbox"/> Air Quality   |
| <input checked="" type="checkbox"/> Biological Resources          | <input checked="" type="checkbox"/> Cultural Resources                 | <input checked="" type="checkbox"/> Geology/Soils |
| <input checked="" type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Hydrology/Water Quality            | <input type="checkbox"/> Land Use/Planning        |
| <input type="checkbox"/> Mineral Resources                        | <input checked="" type="checkbox"/> Noise                              | <input type="checkbox"/> Population/Housing       |
| <input type="checkbox"/> Public Services                          | <input type="checkbox"/> Recreation                                    | <input type="checkbox"/> Transportation/Traffic   |
| <input type="checkbox"/> Utilities/Service Systems                | <input checked="" type="checkbox"/> Mandatory Findings of Significance |   |

## 2.2 DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An

1 ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the  
2 effects that remain to be addressed.

3 ☐ I find that although the proposed Project could have a significant effect on the  
4 environment, because all potentially significant effects (a) have been analyzed  
5 adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable  
6 standards, and (b) have been avoided or mitigated pursuant to that earlier EIR OR  
7 NEGATIVE DECLARATION, including revisions or mitigation measures that are  
8 imposed upon the proposed Project, nothing further is required.

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Signature

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Date

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Printed Name

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For

## 1 2.3 EVALUATION OF ENVIRONMENTAL IMPACTS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.1 AESTHETICS.</b>				
<i>Would the project:</i>				
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 2 Environmental Setting

3 The Project area lies in north central California, in west San Joaquin County and east  
 4 Contra Costa County (see Figure 1). The pipeline route would span approximately  
 5 6.4 miles, from McDonald Island Gas Storage Facility (MDIGSF) to Palm Tract. The  
 6 views of the proposed Project are of agricultural lands separated by levees, rivers,  
 7 sloughs, and riparian vegetation associated with the characteristic and unique Delta  
 8 waterways and islands. Waterways along the eastern border of Contra Costa County  
 9 are designated as "Scenic Waterways" in the County's General Plan (Contra Costa  
 10 County 1996). San Joaquin County has not designated the waterways as scenic,  
 11 although the County does recognize the aesthetic values of the Delta region and the  
 12 General Plan requires the protection of the open space resources for their aesthetic as  
 13 well as recreational values (San Joaquin County 1992).

Contra Costa and San Joaquin Counties identify the Delta as a source of important scenic resources directly related to community identity and require development applications to consider preserving scenic qualities in this area, at the same time recognizing though, that development should not be prohibited and can, in some instances, add to the diversity of the landscape (San Joaquin County 1992 and Contra Costa County 1996). Additionally, the counties recognize the value of travelers' perceptions of scenic resources throughout their boundaries and support scenic route designations along transportation corridors with scenic potential. The concept of scenic corridors is dependent on maintaining the visual character of the surrounding landscape and both counties consider the conservation of surrounding views when reviewing project applications within these corridors (San Joaquin County 1992 and Contra Costa County 1996).

### **Scenic Routes**

Scenic routes, particularly in rural areas, depend on the surrounding landscape for their visual appeal. State Route 4 (SR-4) in Contra Costa County, between State Route 64 in Antioch and State Route 84 near Brentwood, (approximately seven miles southwest of the project site) is eligible for listing as a State Scenic Highway (Caltrans 2005a). SR-4 is also locally designated as a scenic route according to the Contra Costa and San Joaquin Counties' general plans (San Joaquin County 1992 and Contra Costa County 1996). Bacon Island Road is also identified within the San Joaquin County General Plan as a scenic route (San Joaquin County 1992).

### **Regulatory Setting**

#### **Federal**

There are no Federal regulations related to aesthetics that are relevant to the Project.

#### **State**

##### **California State Scenic Highway Program**

The California State Scenic Highway Program was established by the State Legislature through Senate Bill 1467 in 1963. This program is administered by the California Department of Transportation (Caltrans) and was created to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. Designated Scenic Highways have a "Scenic Corridor Protection

Program” adopted by the city or the County. This program requires the following: (1) regulation of land use and density of development; (2) detailed land and site planning; (3) control of outdoor advertising (including a ban on billboards); (4) careful attention to and control of earthmoving and landscaping; and (5) careful attention to design and appearance of structures and equipment (Caltrans 2005a).

## **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that include Open Space and Recreation elements that address aesthetic resources. San Joaquin County published the “San Joaquin County General Plan 2010 Volume I: Policies/Implementation” in July 1992. Contra Costa County published “Contra Costa County General Plan 1995-2010” in July 1996.

## **Impact Discussion**

a. The Project area lies within agricultural land, intermixed with Delta waterways. Although these views are important for their own unique visual character, no scenic vistas are located within close proximity to the Project area. Project construction would occur across level agricultural lands and be temporary in nature. All areas impacted by pipeline construction would be restored to pre-construction conditions, including the restoration of access roads. Therefore, Project activities would not adversely affect any scenic vistas, and impacts would be considered ***less than significant***.

b. There are no Federal or State designated scenic resources within the Project area. A portion of SR-4 in Contra Costa County, approximately seven miles from the Project site, has been designated as eligible for listing as a State scenic highway, but has not been officially listed as such (Caltrans 2005b). During construction, SR-4 would be used for construction and transportation vehicle access. However, no construction would occur on the highway and ***no impact*** to State-designated scenic resources would occur along the portion of SR-4 eligible for listing as a result of this Project.

c. The proposed Project would result in minimal changes to the visual quality of the Project alignment and surrounding areas. The only permanent above-ground features would be the expansion of the valve lot on McDonald Island, the 30-foot by 30-foot valve lot on Palm Tract, with a 20 foot tall Supervisory Control and

1 Data Acquisition (SCADA) antenna, and the six-foot high pipeline markers.  
2 Additional temporary impacts would be construction-related and would consist of  
3 the presence of construction workers and construction equipment in rural areas  
4 as well as ground disturbance related to project clearing, grubbing and  
5 excavation activities, and stockpiling of salvaged topsoil. Project construction is  
6 estimated to take approximately four to six months, and construction-related  
7 activities and the associated impacts to surrounding views would be temporary.

8 Proposed construction-related facilities would include temporary use areas, the  
9 Holt construction yard, and access roads. The surrounding views are valued as  
10 part of the local and regional rural quality of life and include the characteristic and  
11 unique waterways within the Delta region. Storage of construction-related  
12 equipment and stockpiled topsoil may detract from or change the surrounding  
13 visual character of the area; however, construction would be short term and  
14 visual impacts would be temporary.

15 Portions of the proposed pipeline alignment would be adjacent to or within view  
16 of Bacon Island Road, which is designated by the San Joaquin General Plan as a  
17 scenic route. The Holt construction yard is adjacent to SR-4, also locally  
18 designated as a scenic route in both San Joaquin and Contra Costa Counties.  
19 The construction yard is currently used for equipment storage and vehicle  
20 parking.

21 While project-related activities may temporarily impact the surrounding visual  
22 character of the Project area, ground disturbance would occur within areas that  
23 are regularly tilled for agricultural production, and the topography would be  
24 restored following project completion. Signs marking the pipeline alignment the  
25 valve lot expansion on McDonald Island and the valve lot on Palm Tract would  
26 remain permanent surface features, but would not dominate scenic views within  
27 the area. Although these structures are designed to be seen by the public, the  
28 placement and relatively small size of the markers and the valve lot would not  
29 degrade the existing visual character or create sources of visual glare or  
30 substantial light. Therefore, impacts related to substantial degradation of the  
31 existing visual character or quality of the site and its surrounding are considered  
32 ***less than significant.***



- 1 d. The proposed Project would involve grubbing and excavation activities for the  
2 construction of an auxiliary underground natural gas transmission line. The  
3 limited above ground features (pipeline markers and valve lots) would not require  
4 lighting. Night work may occur during the horizontal directional drillings (HDD)  
5 and hydrostatic testing, resulting in the temporary use of artificial lighting, but  
6 would be short term and temporary by nature. The artificial lighting would consist  
7 of light towers providing 4,000 watts of light. No substantial long-term impacts  
8 from light or glare would result from the Project, therefore; impacts are  
9 considered ***less than significant***.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.2 AGRICULTURE RESOURCES.</b>				
<i>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:</i>				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program in the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 1 **Environmental Setting**

2 Agriculture is the dominant land use in San Joaquin County and comprises 87.8 percent  
3 of the total land area (San Joaquin County 1992 and California Agricultural Statistics  
4 Service 2005). The proposed pipeline alignment within San Joaquin County is  
5 designated as General Agriculture by the County's General Plan (San Joaquin County

CDD 2005b). Agricultural resources in Contra Costa County are considered important economic assets, comprising 31 percent of the total land area of the county (Aramburu 2001). The most prevalent crops in the project area are corn, sod, asparagus, and safflower.

## **Prime Farmland**

The Farmland Mapping and Monitoring Program (FMMP) identifies areas of Prime Farmland or Farmland of Statewide Importance within the State, for land that meets two criteria: (1) production of farmland within the last four years prior to the mapping date, and (2) the soil must meet the physical and chemical criteria for Prime Farmland or Farmland of Statewide Importance as determined by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (CA DoC 2005). The proposed pipeline would cross lands designated as “prime farmlands” (CA DoC 2005).

## **Williamson Act Contracts**

The agricultural lands on McDonald Island and Lower Jones Tract that the pipeline would cross are under active Williamson Act contracts. Non-renewal of the Williamson Act contracts on Bacon Island was initiated in 2003 and these contracts will expire in 2013 (Durkee 2005). The agricultural lands on Palm Tract are not under a Williamson Act contract (Smyers 2005), but are subject to the terms and conditions of a conservation easement that limits the use of the parcel to the production of crops, recreation, hunting, and waterfowl habitat preservation.

## **Regulatory Setting**

### **Federal**

There are no Federal regulations that pertain to agricultural resources relevant to this Project.

### **State**

#### **Williamson Act**

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the

purpose of restricting specific parcels of land to agricultural or related open space use, and provides landowners with lower property tax assessments. Local government planning departments are responsible for the enrollment of land into Williamson Act contracts. Generally, any commercial agricultural use will be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted with a use permit. Compatible uses for Williamson Act Agricultural Preserves are established by County Board of Supervisors resolutions and are generally specified by the zoning ordinance United States Department of Agriculture, Soil Conservation Service, Soil Survey of San Joaquin County, October 1992. The San Joaquin County Board of Supervisors has established Utility Services as a compatible use under section 9-1810.3 of the San Joaquin County Development Title (San Joaquin County 1995).

#### Delta Protection Act of 1992

The Delta Protection Act of 1992 created the Delta Protection Commission (DPC), which is charged with the preparation and implementation of a regional plan to address land uses and resource management in the Delta. The DPC adopted the *Land Use and Resource Management Plan for the Primary Zone of the Delta* in February 1995.

This plan includes a Utilities and Infrastructure section with policies and recommendations that include the following:

- Locate new construction in existing utility or transportation corridors, along property lines, or along edges of fields (P-1);
- Bury pipelines deep enough to avoid conflicts with normal agricultural or construction activities (P-1); and
- Consolidate structures needed for gas extraction to minimize the displacement of agriculture (R-7) (CA DPC 2005).

Additionally, the Delta Protection Commission adopted the following regulation relative to agricultural uses in the Delta (14 CCR):

#### **Section 20040**

- a) The priority land use of areas of prime soils shall be agriculture. If commercial agriculture is no longer feasible due to subsidence or lack of adequate water supply or water quality, land uses which protect other beneficial uses of Delta

resources, and which would not adversely affect agriculture on surrounding lands, or viability or cost of levee maintenance, may be permitted. If temporarily taken out of agriculture due to lack of adequate water supply or water quality, the land shall remain reinstatable to agricultural production for the future.

## **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address agricultural resources. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.

### **San Joaquin County Development Title**

The Project area is located entirely within the General Agriculture zoning district as identified by the San Joaquin Development Title. The General Agriculture zone was established to preserve agricultural lands for the continuation of commercial agricultural enterprises (San Joaquin County 1997). Pursuant to section 9-115.580(b) of the *San Joaquin County Development Title*, the project is defined as a Major Utility and is a permitted use in the General Agriculture zoning district (San Joaquin County 1995).

## **Impact Discussion**

### **a, c. Impact AGR–a, c–1: Construction could result in conversion of Prime Farmland to a non-agricultural use.**

Construction of the proposed pipeline would result in disturbance to approximately 100 acres of Prime Farmland as mapped and categorized by the FMMP of the Land Resources Division of the California Department of Conservation. A portion of the agricultural land that would be crossed by the proposed pipeline alignment currently produces specialty crops, including sod and asparagus.

The peat topsoil within the Project area would be separated in accordance with land-owner requirements and field conditions, from other excavated soils and stored for backfill following the completion of construction activities. The pipeline trench would be backfilled with six feet of cover to accommodate continued agricultural production following completion of pipeline construction. The soil would be moderately compacted, using 85 percent of the American Society for Testing and Materials (ASTM) D-1557 test procedure to prevent

seepage or drainage problems. Upon project completion and subsequent restoration of the topography along the pipeline trench, agricultural production would be permitted within the pipeline right-of-way as well as adjacent land. HDD techniques would be used within some of the project areas to reduce disturbance on agricultural lands. Regardless of these precautions, construction techniques could adversely impact crop production, drainage, or property, which would be a *potentially significant impact*. Impacts related to the conversion of Prime Farmland would be reduced to a ***less-than-significant level with implementation of Mitigation Measure AGR–a, c–1***.

#### **Mitigation Measure AGR–a, c–1**

The Applicant shall monitor all areas disturbed along the construction right-of-way to identify any area that may require additional restoration, noxious weed treatment, or erosion control. The applicant shall work with landowners to ensure fair settlement of any claims of crop loss, drainage problems, or property damage related to the pipeline and would repair and correct any areas identified as needing additional work in consultation with the landowner. The Applicant's contractor shall obtain landowner sign-off verifying all restoration has been completed to the satisfaction of the landowner prior to demobilizing from the right-of-way.

#### **Impact AGR–a, c–2: Operation of the proposed Project could result in the conversion of Prime Farmland.**

Approximately 39 acres of Prime Farmland would be restricted under the permanent easement that the Applicant is proposing. Restrictions under this easement would prohibit the planting of trees or vines within 10 feet of the pipeline centerline or erecting structures over the pipeline, but would allow other agricultural uses. The easement would not prohibit agricultural uses or result in the conversion of Prime Farmland to other uses. Approximately 0.02 acres of Prime Farmland on Palm Tract would be permanently converted to non-agricultural uses with the creation of the valve lot. This loss would be minimal relative to the amount of Prime Farmland in the area.

The proposed pipeline would be cement coated to prevent the pipeline from "floating out of the trench" and would have a minimum of six feet of soil on top of the pipeline, to allow for the continuation of agricultural practices. The alignment

has also been designed to follow local access roads as much as possible. Pipeline soil cover would be greater than six feet in locations where the pipeline would be installed with HDD. However, due to the nature of the Delta, much of the land is subsiding. The effects of subsidence on the integrity of the pipeline are unknown at this time. Implementation of Mitigation Measure GEO-c-3 would identify these effects. Subsidence rates for Bacon Island and Lower Jones Track were last determined in 1981 and found to range from 1.2 to 1.6 inch per year (Deverel, Fujii and Hastings 1998). Using this average, top soil coverage could reach a minimum of three feet in 25 years, for approximately 33 percent of the pipeline alignment. Farmers' cultivation activities on their fields could be restricted when less than three feet of topsoil remains, resulting in the conversion of Prime Farmland to a non-agricultural use, a *potentially significant impact*. Implementation of the following mitigation measures would reduce this impact to a ***less-than-significant level***.

**Mitigation Measure AGR-a, c-2**

The Applicant shall conduct a risk analysis (including measuring the depth of the topsoil over the pipe) every seven years until there is only three feet of topsoil remaining over the pipeline. At that time, given the current Federal, State, and local regulations and local land uses, the Applicant shall consult with the California State Lands Commission (CSLC) to determine what resolution would be required. Possible solutions could include, but are not limited to:

- a. addition of soil to maintain three feet of cover;
  - b. lowering the pipe;
  - c. placing a protective barrier over the top of the pipeline.
- b. The agricultural lands on McDonald Island and Lower Jones Tract that the pipeline would cross are under active Williamson Act contracts. Non-renewal of the Williamson Act contracts on the agricultural land on Bacon Island was initiated in 2003 and these contracts will expire in 2013 (Durkee 2005). Preliminary consultation with the Land Resource Protection Division of the State Department of Conservation indicates that because the Project in San Joaquin County would not involve the construction of any above-ground facilities (the McDonald Island valve lot expansion is on PG&E property, not subject to the

1 Williamson Act) and would not result in the permanent loss of agricultural lands,  
2 the Project would be consistent with the provisions of the Williamson Act,  
3 provided the County has no specific land use conflicts or concerns (Lagomarsino  
4 2005). Section 9-1810.3 of Title 9 of the *San Joaquin County Development Title*  
5 (1995) states that petroleum and gas extraction and utilities are permitted uses  
6 under Williamson Act Contracts.

7 Palm Tract is not covered under a Williamson Act contract (Smyres 2005), but is  
8 under a conservation easement, granted by the Transmission Agency of  
9 Northern California (TANC) to the California Department of Fish and Game  
10 (CDFG). Preconstruction consultation has been initiated between the Applicant  
11 and CDFG. The conservation easement states that the installation of utility  
12 structures or lines are inconsistent uses; however, because the Line 57C pipeline  
13 would be buried and the valve lot is small in size, CDFG staff concurs that the  
14 proposed Project would not conflict with the purpose of the conservation  
15 easement (Burkholder 2006).

16 Construction and operation of the proposed Project would be incidental to  
17 agricultural production and would be consistent with the intent of the Williamson  
18 Act. Agricultural production would resume following Project construction and the  
19 proposed Project would not conflict with existing Agricultural Zoning or with the  
20 provisions of the Williamson Act. Impacts are therefore considered ***less than***  
21 ***significant.***



Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.3 AIR QUALITY.</b>				
<i>Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations: Would the project:</i>				
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 1 Environmental Setting

- 2 Criteria air pollutants are a group of pollutants for which Federal or State regulatory  
3 agencies have adopted ambient air quality standards. Criteria air pollutants include

ozone, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter, and lead. Most of the criteria pollutants are directly emitted. Ozone, however, is a secondary pollutant that is formed in the atmosphere by chemical reactions between oxides of nitrogen (NO<sub>x</sub>) and reactive organic gases (ROG).

Criteria air pollutants are classified in each air basin, county, or in some cases, within a specific urbanized area. The classification is determined by comparing actual monitoring data with State and Federal standards. If a pollutant concentration is lower than the standard, the area is classified as “attainment” for that pollutant. If an area exceeds the standard, the area is classified as “non attainment” for that pollutant. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated “unclassified”.

Both Contra Costa County and San Joaquin County are in nonattainment of the Federal standards for the following criteria pollutant:

8-hour ozone

In addition, San Joaquin County is also in nonattainment of the Federal standards for two other criteria pollutants:

Particulate matter less than 10 microns in diameter (PM<sub>10</sub>)

Particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>)

Both San Joaquin and Contra Costa Counties are in nonattainment of the State standards for the following:

Particulate matter less than 10 microns in diameter (PM<sub>10</sub>)

Particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>)

## **Regulatory Setting**

### **Federal**

#### **U.S. Environmental Protection Agency (EPA)**

The EPA is the Federal agency responsible for setting and enforcing the Federal ambient air quality standards for atmospheric pollutants and regulates emission sources

1 that are under the exclusive authority of the Federal government, such as aircraft, ships,  
2 and certain locomotives. EPA also has jurisdiction over emissions sources outside  
3 State waters (outer continental shelf), and establishes various emissions standards for  
4 vehicles sold in states other than California.

5 As part of its enforcement responsibilities, EPA requires each state with nonattainment  
6 areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the  
7 means to attain the Federal standards. The SIP must integrate Federal, State, and  
8 local plan components and regulations to identify specific measures to reduce pollution  
9 in nonattainment areas, using a combination of performance standards and market-  
10 based programs.

#### 11 Federal Clean Air Act

12 The Federal Clean Air Act (FCAA), as amended, establishes air quality standards for  
13 several pollutants. These standards are divided into primary standards and secondary  
14 standards. Primary standards are designed to protect public health, and secondary  
15 standards are intended to protect public welfare from effects such as visibility reduction,  
16 soiling, nuisance, and other forms of damage. The FCAA requires that regional plans  
17 be prepared for non attainment areas illustrating how the Federal air quality standards  
18 could be met. These plans are collectively called the SIP. The SIP is submitted by a  
19 state to the Federal EPA for approval.

#### 20 Ozone Standards

21 The Federal eight-hour ozone standard was established in response to human health  
22 studies indicating that longer ozone exposures at lower levels also resulted in adverse  
23 health effects, including coughing, increased asthma attacks, chronic lung inflammation,  
24 decreased lung function, and decreased lung defenses against bacterial infections. The  
25 eight-hour standard was established in order to eventually replace the existing one-hour  
26 standard. The Federal one-hour standard which was in place prior to the eight-hour  
27 standard, was revoked in June of 2005.

#### 28 **State**

#### 29 California Air Resource Board (CARB)

30 The CARB, a part of the California Environmental Protection Agency, is responsible for  
31 the coordination and administration of both Federal and State air pollution control

programs within California. In this capacity, the CARB conducts research, sets State ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB also has primary responsibility for the development of California's SIP, in which it works closely with the Federal government and the local air districts.

### California Clean Air Act

The California Clean Air Act of 1988 requires nonattainment areas to achieve and maintain the State ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the State ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards.

### **Local**

Locally, air quality is regulated by air quality management districts or air pollution control districts. These districts can cover a county, or sometimes multiple counties.

The Project site is located in Contra Costa and San Joaquin Counties. Contra Costa County is partially in the jurisdiction of the Yolo-Solano Air Quality Management District and partially in the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The portion of Contra Costa County where the pipeline would be located is in the jurisdiction of the BAAQMD. San Joaquin County is in the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Both the BAAQMD and SJVAPCD have produced guidance on evaluating the potential air quality impacts of a project. These guidance documents are developed so that projects that comply with the requirements in the guidance, and do not exceed any thresholds of significance in the guidance, will be in conformity with air district air quality plans.

San Joaquin and Contra Costa Counties have General Plans with elements that address air quality. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.

Both the SJVAPCD and the BAAQMD have adopted rules that would apply to the Project. SJVAPCD and BAAQMD rules applicable to the Project are listed below:

### **SJVAPCD**

**Regulation VIII** (Fugitive PM<sub>10</sub> Prohibitions) Regulation VIII (Rules 8010-8081) is a series of rules designed to reduce PM<sub>10</sub> emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc.

**Rule 4101** (Visible Emissions) This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

**Rule 4102** (Nuisance) Applies to any source operation that emits or may emit air contaminants or other materials that may be open burned. Agricultural material shall not be burned when the land use is converting from agriculture to non-agricultural purposes, e.g., commercial, industrial, institutional, or residential uses. Section 5.1 of this rule prohibits the burning of trees and other vegetative (non-agricultural) material whenever the land is being developed for non-agricultural purposes. In the event that the project applicant burned or burns agricultural material, it would be in violation of Rule 4103 and be subject to District enforcement action.

**Rule 4641** (Cutback, Slow Cure, an Emulsified Asphalts, Paving and Maintenance Operations) If asphalt paving will be used, then paving operations of this project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

### **BAAQMD**

**Regulation 6** (Particulate Matter and Visible Emissions) Limits the quantity of particulate matter in the atmosphere through the establishment of limitations on emission rates, concentration, visible emissions, and opacity.

**Regulation 7** (Odorous Substances) Places general limitations on odorous substances and specific emission limitations on certain odorous compounds.

**Regulation 8-15** (Emulsified and Liquid Asphalts) Limits volatile organic compounds caused by the use of Emulsified and Liquid asphalt in paving materials and paving and maintenance operations.

#### **Impact Discussion**

**a,b. Impact AIR-a, b-1: Construction activities would generate emissions and fugitive dust.**

The Project would involve the construction and operation of a new 6.4-mile long pipeline. Construction of the pipeline would involve heavy-duty construction equipment that would generate criteria pollutants, and disturb soil. Consequently, the Project would generate short-term emissions during construction.

The BAAQMD CEQA Guidelines state that “Fine particulate matter (PM<sub>10</sub>) [fugitive dust] is the pollutant of greatest concern with respect to construction activities.” This statement includes a footnote which states “Construction equipment emits carbon monoxide and ozone precursors. However, these emissions are included in the emission inventory that is the basis for regional air quality plans, and are not expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area” (BAAQMD 1999).

The BAAQMD CEQA Guidelines deal with potential PM<sub>10</sub> impacts by stating “Construction emissions of PM<sub>10</sub> can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions and other factors. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implemented to significantly reduce PM<sub>10</sub> emissions from construction. The District’s approach to the CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions” (BAAQMD 1999). The BAAQMD CEQA Guidelines also provide a list of feasible control measures for the control of construction emissions of PM<sub>10</sub>. Because the proposed Project is a pipeline project, it is not a typical construction site. There would be very little grading involved, and the area that is actually disturbed on a daily basis would not be large. BAAQMD Regulation 7- Odorous Substances, would also regulate particulate emissions during construction.

1 The proposed Project also would be located in the jurisdiction of the SJVAPCD.  
2 Like the BAAQMD, the SJVAPCD has published a guidance document for  
3 assessing air quality impacts of projects, titled *Guide for Assessing and*  
4 *Mitigating Air Quality Impacts* (GAMAQI). The GAMAQI states that “A project’s  
5 construction phase produces many types of emissions, but PM<sub>10</sub> is the pollutant  
6 of greatest concern” (SJVAPCD GAMAQI 2002). The GAMAQI also states that  
7 the annual NO<sub>x</sub> threshold may apply to construction activity, but only to very  
8 large construction projects. The GAMAQI recommends a qualitative approach to  
9 PM<sub>10</sub> construction evaluation rather than a detailed quantification of emission  
10 and states, “PM<sub>10</sub> emitted during construction can vary greatly depending on the  
11 level of activity, the specific operations taking place, the equipment being  
12 operated, local soils, weather conditions, and other factors, making quantification  
13 difficult. Despite this variability in emissions, experience has shown that there  
14 are a number of feasible control measures that can be reasonably implemented  
15 to significantly reduce PM<sub>10</sub> emissions from construction. The SJVAPCD has  
16 determined that compliance with Regulation VIII for all sites and implementation  
17 of all other control measures indicated in Tables 6-2 and 6-3 (as appropriate,  
18 depending on the size and location of the project site) would constitute sufficient  
19 mitigation to reduce PM<sub>10</sub> impacts to a level considered less-than-significant.”

20 Potential construction emissions were modeled to ensure that the construction of  
21 the proposed Project would not exceed the SJVAPCD’s NO<sub>x</sub> threshold. Normally  
22 the construction emissions of a project are modeled using the CARB Urban  
23 Emissions Model (URBEMIS) 2002 modeling program. However, this model is  
24 geared towards typical development projects that occur over a larger area. The  
25 proposed Project is linear in nature, so the URBEMIS 2002 model is not  
26 appropriate for estimating construction emissions. Instead, the Sacramento  
27 Metropolitan Air Quality Management District’s Roadway Construction Emissions  
28 Model, Version 5.1, was used. This allows a user to estimate emissions from a  
29 roadway project by specifying equipment used during different phases of  
30 construction, the duration of the construction period, and the hours per day the  
31 various pieces of equipment would be used over the construction period. The  
32 model provides emission factors for each piece of equipment based on the  
33 equipments’ model year. Because of the linear nature of the proposed Project,  
34 this is the most appropriate model to use. Data on construction equipment and  
35 hours of use were provided by the Applicant. The modeling showed that over the  
36 four month construction period, with the construction equipment numbers

provided by the Applicant, a maximum of 76 pounds per day of NO<sub>x</sub> would be generated. A total of between four and five tons of NO<sub>x</sub> would be generated over the entire construction period. This amount would be less than the ten tons of NO<sub>x</sub> per year SJVAPCD threshold of significance for operational and large construction projects.

The purging procedure that would occur just prior to bringing the pipeline on line is not included in the construction emissions calculation because the procedure would not generate significant criteria air pollutants. Only natural gas would be released. This would be quickly dispersed because it would be released outdoors.

Prior to the implementation of the BAAQMD and SJVAPCD recommended mitigation measures for PM<sub>10</sub>, the PM<sub>10</sub> impact from a project of this size and type would be significant. The BAAQMD accounts for all other criteria pollutants generated by construction in its air quality plans, and modeling shows that the SJVAPCD 10 tons per year threshold of significance for NO<sub>x</sub> would not be exceeded by this Project. Operational emissions from the proposed Project would be essentially zero because no earth disturbance or burning of fuels would be involved after construction. Future maintenance of the pipeline would not generate a substantial number of vehicle trips. Consequently, while operation of the proposed Project would not conflict with the implementation of any air quality plans, construction-related PM<sub>10</sub> impacts would be *significant*. This impact would be reduced to a ***less-than-significant level, with the implementation of the following mitigation measure.***

The following mitigation measure would implement all applicable recommended SJAPCD and BAAQMD measures for the reduction of PM<sub>10</sub>. Of the measures listed in the BAAQMD “Basic Control Measures” and Enhanced Control Measures” categories, only some apply to the proposed Project. The same is true for measures listed in Tables 6-2 and 6-3 of the SJVAPCD GAMAQI. In cases where the recommended BAAQMD measures and the recommended SJVAPCD measures overlap, the most stringent shall apply.

#### **Mitigation Measure AIR–a, b–1**

The construction contractor shall ensure that the following Bay Area Air Quality Management District measures are implemented during construction:



- 1 (a) Water all construction areas at least twice daily.
- 2 (b) Cover all trucks hauling soil, sand and other loose materials or  
3 require all trucks to maintain at least two feet of freeboard space.
- 4 (c) Enclose, cover, water twice daily or apply (non-toxic) soil binders to  
5 exposed stockpiles (dirt, sand, etc).
- 6 (d) Replant vegetation in disturbed areas as quickly as possible.
- 7 The construction contractor shall also ensure that the following San Joaquin  
8 Valley Air Pollution Control District measures are implemented during  
9 construction:
- 10 (e) All disturbed areas, including storage piles, which are not being  
11 actively utilized for construction purposes, shall be effectively  
12 stabilized of dust emissions using water, chemical  
13 stabilizer/suppressant, covered with a tarp or other suitable cover  
14 or vegetative ground cover.
- 15 (f) All land clearing, grubbing, scraping, excavation, land leveling,  
16 grading, cut and fill, and demolition activities shall be effectively  
17 controlled of fugitive dust emissions utilizing application of water or  
18 by presoaking.
- 19 (g) When materials are transported off-site, all material shall be  
20 covered, or effectively wetted to limit visible dust emissions, and at  
21 least six inches of freeboard space from the top of the container  
22 shall be maintained.
- 23 (h) Following the addition of materials to, or the removal of materials  
24 from, the surface of outdoor storage piles, said piles shall be  
25 effectively stabilized of fugitive dust emissions utilizing sufficient  
26 water or chemical stabilizer/suppressant.
- 27 c. Most of the proposed Project would be located in the jurisdiction of the  
28 SJVAPCD, with the remainder under the jurisdiction of the BAAQMD. Both the  
29 SJVAPCD and the BAAQMD provide guidance for assessing the cumulative  
30 impacts of projects.

The BAAQMD guidance specifies that a project would have a cumulative impact if it also has an individually significant air quality impact or if it requires a change in zoning to a more intense land use from that specified in the applicable General Plan (BAAQMD 1999). As discussed in items 2.3.3 a and b, the proposed Project's individual impact would not be in excess of any BAAQMD thresholds of significance. The proposed Project also would not require any change in zoning.

The SJVAPCD guidance specifies that a project would be cumulatively significant if it exceeds the SJVAPCD thresholds for either ROG or NO<sub>x</sub> (SJVAPCD GAMAQI 2002). As discussed in items 2.3.3 a and b, the proposed Project would not exceed either of these SJVAPCD thresholds. For PM<sub>10</sub>, the proposed Project would have a less-than-significant individual project impact once mitigation measure AIR-a, b-1 is implemented. Consequently, because the project's individual PM<sub>10</sub> impact would be less than significant after mitigation, the cumulative impact after mitigation would be less than significant.

Based on the BAAQMD and SJVAPCD guidance, the proposed Project would have a ***less-than-significant cumulative impact***.

- d. The only criteria air pollutants of concern that could be generated by the Project to create substantial pollutant concentrations are CO and PM<sub>10</sub>. Since these pollutants are directly emitted, they can potentially form unhealthy concentrations in the area in which they are generated. Ozone is a regional pollutant, which means that ozone concentrations are the product of many different emissions sources. Since ozone is the product of a chemical reaction in the upper atmosphere, ozone concentrations can form far from where ozone precursors are generated. Consequently, the analysis to nearby sensitive receptors should focus on CO and PM<sub>10</sub>. Also, toxic air contaminants (TAC) can concentrate and have health impacts in the area in which they are produced. TACs can have unhealthy chronic (long-term) cancer impacts and acute (short-term) non-cancer impacts.

As discussed in items 2.3.3 a and b, once the proposed Project is built and operational, there would be no soil disturbance or combustion of fuels. The proposed Project would also not generate substantial new vehicle trips. Because operations of the proposed Project would not generate new emissions, the

1 proposed Project would not expose sensitive receptors to substantial pollutant  
2 concentrations during operation.

3 During construction of the proposed Project, PM<sub>10</sub>, CO and TACs would be  
4 produced. Of these pollutants, only PM<sub>10</sub> would be potentially significant during  
5 project construction. As discussed in items 2.3.3 a and b, the applicable PM<sub>10</sub>  
6 mitigation measures, as recommended by the BAAQMD and the SJVAPCD,  
7 would be implemented during construction. According to BAAQMD and  
8 SJVAPCD guidance, implementation of this mitigation measure (AIR–a, b–1)  
9 would ensure that PM<sub>10</sub> concentrations do not reach unhealthy levels. CO is  
10 only an issue when conditions are such that CO collects in a certain location.  
11 This is most likely to happen at congested intersections when there are calm  
12 meteorological conditions that inhibit dispersion of CO. Construction of the  
13 proposed Project would not cause congested conditions at any roadways.  
14 Consequently, any CO emissions would not be likely to result in any substantial  
15 concentrations that could affect sensitive receptors.

16 The only TAC that construction of the proposed Project is likely to produce is  
17 diesel particulate as a result of diesel fuel combustion. The CARB determined  
18 that the chronic impact of diesel particulate was of more concern than the acute  
19 impact in its *Risk Management Guidance for the Permitting of New Stationary*  
20 *Diesel-Fueled Engines*. In this document, the CARB noted that “Our analysis  
21 shows that the potential cancer risk from inhalation is the critical path when  
22 comparing cancer and noncancer risk. In other words, a cancer risk of 10 per  
23 million from the inhalation of diesel PM would result from diesel PM  
24 concentrations that are much less than the diesel PM or TAC concentrations that  
25 would result in chronic or acute noncancer hazard index values of 1 or greater”  
26 (CARB 2000). Consequently, any analysis of diesel TAC should focus on the  
27 long-term, chronic cancer risk posed by the diesel. Chronic cancer risk is  
28 normally measured by assessing what the risk to an exposed individual from a  
29 source of TACs would be if the exposure occurred over 70 years. The  
30 construction period of the proposed Project would be approximately four to six  
31 months. The closest sensitive receptors would be the agricultural housing on  
32 McDonald Island, approximately 60 feet from the pipeline route. Construction in  
33 proximity to this receptor would last less than one month. Since acute impacts  
34 are not a concern with diesel TAC, and since diesel would only be generated for  
35 approximately four to six months and there would be no sensitive receptors in the

vicinity of the construction activity for a long period of time, the proposed Project would not expose sensitive receptors to substantial TAC concentrations.

Since no sensitive receptors would be exposed to substantial concentrations of either directly emitted criteria pollutants or TACs for long periods of time, this would be a ***less-than-significant impact***.

e. **Impact AIR-e-1: Purging operations would create odors.**

Pipeline projects are not known to be sources of offensive odors. The pipeline would be placed underground where the release of any odors would not be noticeable. Table 4-2 of the SJVAPCD GAMAQI provides a list of sources known to produce odors and includes such sources as landfills, rendering plants, feed lots, and petroleum refineries. Pipeline projects, such as the proposed Project, are not included in the table.

Construction of the proposed Project could conceivably generate odors from the combustion of fuels. However, the construction would not occur over long periods of time, and would take place in open space where any odors would be dispersed. This would also be the case during the purging procedure when natural gas would be released into the air. However, past experience has shown that during pipeline purging procedures, residents in the area can notice a gaseous smell and become concerned about possible gas leaks. As such, it is not offensive odors that are the impact, but the public's perceived danger when the smell of gas becomes temporarily noticeable. Air districts have asked to be notified prior to the start of the purging procedure so that the public can be informed about the source of the odor. This notification should fully mitigate the impact associated with public concern over noticeable gaseous odors.

All construction and purging processes would also be temporary in nature and would not create a permanent odor source. Consequently, this would be a ***less-than-significant impact***. However, because temporary odor annoyance from the release of natural gas may occur during the purging procedure, the following mitigation measure will be implemented.

1           **Mitigation Measure AIR-e-1**

2           The Applicant shall notify the San Joaquin Valley Unified Air Pollution Control  
3           District and Bay Area Air Quality Management District 48 hours prior to the  
4           beginning of the purging procedure.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.4 BIOLOGICAL RESOURCES.</b>				
<i>Would the project:</i>				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
corridors, or impede the use of wildlife nursery sites?				
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or State habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 Information for this section was obtained from the *PG&E Line 57C Biological Resource*  
2 *Technical Report* (Appendix D) and the *PG&E Line 57C, Draft Wetland Delineation*  
3 *Report* (Appendix E), prepared by EIP Associates, the California Natural Diversity  
4 Database (CNDDB), and the U.S. Fish and Wildlife Service (USFWS) species list in a  
5 letter dated January 5, 2006. Biological surveys for the EIP reports were conducted in  
6 March, April, and June, 2005 and included the final Project alignment and temporary  
7 use areas. The wetland delineation was verified by the United States Army Corps of  
8 Engineers (Corps) on November 8, 2005, which found that the 240-acre wetland  
9 delineation survey area (an area larger than the construction area) contained 24.295  
10 acres of wetlands.

## 11 **Environmental Setting**

### 12 **Existing Conditions**

13 Vegetation in the region historically included extensive marsh wetland areas, native  
14 grassland, and riparian communities. Over time many of these communities have been  
15 replaced by non-native naturalized vegetation communities (e.g., ruderal (weedy)  
16 communities), due to agricultural conversion and other anthropogenic infrastructure  
17 activities (i.e., dredging, levee construction, etc.). A description of the predominant

existing vegetation community types found at the Project site is provided in the following paragraphs. Significant habitat types in the Project area are listed in Table 2-1.

**Table 2-1: Significant Wildlife Habitat to be Crossed by Line 57C**

Island/Waterway	Habitat Type
McDonald Island	Seasonal Wetland Agriculture
Empire Cut/Latham Slough Crossing	Freshwater Emergent Marsh Open Water Warm Water Fishery
Lower Jones Tract	Seasonal Wetland Agriculture
Middle River Crossing	Freshwater Emergent Marsh Open Water Warm Water Fishery
Bacon Island	Seasonal Wetland Agriculture
Old River Crossing	Open Water Warm Water Fishery
Palm Tract	Seasonal Wetland Agriculture

#### Agricultural Land

The primary vegetation communities found along and around the Project alignment consist mostly of agricultural crops such as asparagus, corn or alfalfa. In addition to these plantings, there is a sod (grass) farm on McDonald Island. Most of the agricultural fields found along the alignment support annual row crops, e.g. corn, that are planted in the spring and harvested during the summer or fall. In many areas, a second crop is often planted after harvesting the first. Asparagus, one perennial crop found on McDonald Island along the Project alignment, is typically planted in an 8 to 10 year rotation cycle.

Due to the heavily disturbed nature of the site, only those wildlife species which have adapted to intensive anthropogenic disturbance regimes associated with farming are likely to occur in agricultural land. The wildlife species that were observed during the March, April, and June, 2005 field surveys conducted by EIP Associates included American crow (*Corvus brachyrhynchos*), western meadowlark (*Sturnella neglecta*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), raccoon (*Procyon lotor*) and coyote (*Canis latrans*). However, several other wildlife species are likely to make use of the site, including European



1 starling (*Sternus vulgaris*), house sparrow (*Passer domesticus*), northern mockingbird  
2 (*Mimus polyglottos*), western scrub jay (*Aphelocoma coerulescens*), Brewer's blackbird  
3 (*Euphagus cyanocephalus*), house mouse (*Mus musculus*), black rat (*Rattus rattus*),  
4 Norway rat (*Rattus norvegicus*), striped skunk (*Mephitis mephitis*), and opossum  
5 (*Didelphis virginiana*). Many species occupy the area only in the winter; the most  
6 common groups of wintering wildlife include waterfowl, shorebirds, wading birds, and  
7 raptors. In general, the Delta provides habitat for shorebirds and wintering waterfowl  
8 that migrate down the Pacific Flyway each year. Large numbers of geese and ducks  
9 are attracted to unharvested crop stubble and flooded fields. The Delta also supports  
10 large numbers of wintering raptors such as the red-tailed hawk, ferruginous hawk  
11 (*Buteo regalis*), rough-legged hawk (*B. lagopus*), merlin (*F. columbarius*), and peregrine  
12 falcon (*F. peregrinus*). During the winter, raptors forage opportunistically throughout the  
13 Delta on rodents and birds that are more likely exposed by field flooding and other  
14 agricultural ground-disturbing activities.

#### 15 Ruderal Communities

16 The predominant non-agricultural vegetation communities found along the Project  
17 alignment consists of ruderal communities of introduced annual and perennial grasses  
18 and forbs associated with highly disturbed habitats. These communities can be found  
19 primarily along roadside right of ways, levees, and farm fields. Many of these  
20 communities are patchy or linear in nature (especially along the levees) depending on  
21 the degree of disturbance. Density and composition of these community types vary with  
22 site factors such as topography, agricultural practices, fluctuating water levels, and  
23 drainage regimes. The more commonly observed plant species included Bermuda  
24 grass (*Cynodon dactylon*), Johnson grass (*Sorghum halapense*), wild radish (*Raphanus*  
25 *sativus*), Italian thistle (*Carduus pycnocephalus*), yellow star-thistle (*Centaurea*  
26 *solstitialis*), wild mustard (*Brassica* spp.), wild lettuce (*Lactuca* spp.), milk thistle  
27 (*Silybum marianum*), common knotweed (*Polygonum arenastrum*), cheeseweed (*Malva*  
28 spp.), field bindweed (*Convolvulus arvensis*), goosefoot (*Chenopodium* spp.), pigweed  
29 (*Amaranthus* spp.), horseweed (*Conyza canadensis*), and prickly sow-thistle (*Sonchus*  
30 *asper*). Wildlife species found in this habitat type would be similar to those found within  
31 the agricultural habitat.

#### 32 Open Water/Freshwater Emergent Marsh

33 Open water is found throughout the length of the proposed alignment and ranges from  
34 irrigation canals to rivers. The larger rivers - Middle River, Old River, Latham Slough,

and Empire Cut – have areas of freshwater emergent marsh habitat. The sparse riparian vegetation supports few trees and generally consists of vegetation able to colonize gaps in the riprap, or at the water's edge, such as cattails (*Typha* spp.) and tule (*Schoenoplectus* spp.). The herbaceous layer consists of ruderal grasses and forbs able to tolerate fluctuating water levels associated with the waters contained within the levees. There is no well-developed floodplain along the rivers. In addition to the fish species supported by the river habitat as discussed below, this habitat type supports invertebrate species such as freshwater clams (*Corbicula* sp.) and Louisiana crayfish (*Procambarus clarkii*), along with waterfowl species such as great blue heron (*Ardea herodias*), great egret (*Ardea alba*), American coot (*Fulica americana*), pied-billed grebe (*Podilymbus podiceps*), and green heron (*Butorides virescens*).

#### *Empire Cut/Latham Slough*

Empire Cut connects Middle River to the main stem of the San Joaquin River via Whiskey Slough and Turner Cut. Latham Slough runs from Empire Cut, on the west side of McDonald Island, north to Middle River. Both the north and south levees where Line 57C would cross Empire Cut and Latham Slough are rip-rapped and devoid of riparian vegetation, however there is a small island that supports intermittent patches of cattails and tules. The fisheries within the area would be generally classified as warm water with sport-fish species including striped bass (*Morone saxatilis*), largemouth bass (*Micropterus salmonides*), various sunfish (*Lepomis* sp.), crappie (*Pomoxis* sp.), and catfish (*Ictalurus* sp.).

#### *Middle River and Old River*

Both of these rivers are likely historic streambeds of the San Joaquin River and connect to each other via various irrigation canals. Both rivers naturally flow in a northerly direction and connect again with the San Joaquin River along the west and east sides of Mandeville Island (over five miles north of the Project area). Within the Project area, these two rivers are roughly parallel and flow along the east and west side of Bacon Island.

Line 57C would cross Middle River and an adjacent unnamed channel at the northeast corner of Lower Jones Tract and transverse west to Bacon Island. Habitat within this area is relatively more complex than the other river crossings, with abundant emergent freshwater marsh vegetation (tules, cattails, etc). A large area of shallow water on the eastern side of Middle River could provide a spawning area for bass and sunfish as well

1 as protected foraging habitat for smaller fish. Additionally, this emergent vegetation  
2 extends the length of the unnamed channel providing foraging habitat for warm water  
3 fish species such as largemouth bass, crappie, and bluegill (*Lepomis macrochirus*).

4 The proposed Line 57C alignment would cross Old River at the eastern edge of Bacon  
5 Island and transverse west to Palm Tract. This area does not support any riparian  
6 habitat and contains only scattered patches of aquatic vegetation, but does support two  
7 special status plant species, rose mallow (*Hibiscus lasiocarpus*) and Mason's lilaeopsis  
8 (*Lilaeopsis masonii*), observed during field surveys conducted by EIP Associates. The  
9 riverbanks are rip-rapped and provide limited aquatic habitat. The fisheries resources  
10 within this area are the same as those at Middle River.

#### 11 *Irrigation Ditches*

12 The Line 57C alignment would cross 34 irrigation ditches and two major drainage  
13 canals between its origin on McDonald Island and the end point on Palm Tract. These  
14 ditches are filled directly from the Delta river channels, and entrainment likely imports  
15 fish into these channels. Ditches that are permanently inundated likely support similar  
16 assemblages as the adjacent rivers, while those that routinely dry out likely only harbor  
17 fish for short periods of time. None of the irrigation ditches are likely to support  
18 sensitive species or provide habitat suitable for maintaining substantial populations of  
19 fish.

#### 20 Seasonal Wetland

21 Seasonal wetland habitat within the Project area is found in a few locations on McDonald  
22 Island, Bacon Island and Palm Tract, but would be avoided through project design and  
23 HDD techniques. These seasonal wetlands occur in low depressional areas and support  
24 cattail, Bermuda grass, Italian ryegrass (*Lolium perenne*), spikerush (*Eleocharis*  
25 *macrostachya*), Baltic rush (*Juncus balticus*.) iris-leaved rush (*Juncus xiphioides*), pale  
26 smartweed (*Polygonum lapathifolium*), lady's thumb (*Polygonum persicaria*), stinging  
27 nettle (*Urtica dioica* ssp. *holosericea*), and Himalayan blackberry (*Rubus discolor*). Often  
28 these seasonal wetland features support common wildlife species such as house sparrow,  
29 red-winged blackbird (*Agelaius phoeniceus*), killdeer (*Charadrius vociferous*) northern  
30 mockingbird, house finch (*Carpodacus mexicanus*), and house mouse.

## Naturalized Habitat

There is an area on McDonald Island, just east of the pipeline route, that has not been used for agricultural practices. The area is delineated as a “borrow pit” on the USGS Holt 7.5 minute quadrangle map and appears to connect to Whiskey Slough. The area is separated from agricultural practices on McDonald Island by an access road and a narrow waterway. Vegetation within this area includes toyon (*Heteromeles arbutifolia*), Coyote brush (*Baccharis pilularis*), elderberry (*Sambucus* sp.), cottonwood (*Poplar* sp.), and willows (*Salix* sp.).

## **Special Status Species and Sensitive Habitats**

The potential occurrence of special-status plant and animal species within and in the vicinity of the proposed pipeline has been determined through habitat information collected during field surveys of the pipeline route, conducted in March, April, and June, 2005, and a review of the CNDDDB and USFWS species list in a letter dated January 5, 2006.

According to the CNDDDB and the January 5, 2006, USFWS letter, a total of 81 special-status species and one sensitive natural community have the potential or are known to occur in the vicinity of the proposed Project. This includes 13 plants, 12 invertebrates, 10 fish, 3 amphibians, 8 reptiles, 27 birds, and 8 mammals. Reconnaissance-level biological surveys performed in March, April and June 2005, determined habitat types present within and adjacent to the proposed pipeline route area and assessed their suitability for native plant and animal species. Reconnaissance surveys consisted of walking transects through representative habitats that occur within the pipeline route and assessing the habitat for its suitability to support those species that were identified through the earlier literature review. Particular attention was given to areas that appeared to provide the most suitable habitat for the special-status species that are expected to occur in the region, e.g. freshwater marsh, seasonal wetlands, drainages. Using the information gathered during these site visits, the species list derived from the background research was refined to determine which species were in fact likely to occur within and around the proposed pipeline route.

Based upon this work, Table 2-2 lists the special-status species known or with the potential to occur in the Project area and indicates the species' current regulatory status and potential location. Species which have no potential to occur within the vicinity of the

1 pipeline route have been removed from further consideration and will not be analyzed in  
2 this document.

3 Special-Status Plants

4 *Bristly sedge (Carex comosa)*

5 Bristly sedge is a California Native Plant Society (CNPS) list 2 plant (rare, threatened, or  
6 endangered in California, but more common elsewhere) that blooms from May through  
7 September. Sedges are grass-like plants; bristly sedge is 20 to 40 inches tall, and  
8 seeds are produced on long, nodding stalks. It is found throughout the northern half of  
9 California in a variety of habitats including coastal prairie, marshes, swamps, and valley  
10 and foothill grasslands. It is threatened primarily by alteration of its habitat by marsh  
11 drainage. Elevations range from 0 to 2,050 feet. Freshwater emergent marsh habitat  
12 found along portions of Old and Middle Rivers, Latham Slough, and Empire Cut  
13 represent potential suitable habitat for this species. This species was not observed  
14 during the 2005 surveys.

15 *Delta Mudwort (Limosella subulata)*

16 Delta mudwort is a CNPS list 2 plant, found on mud banks of the Delta in marshy or  
17 scrubby riparian associations, often with Mason's lilaeopsis (*Lilaeopsis masonii*). Its  
18 blooming period is from May through August and its elevation range is 0 to 13 feet.  
19 Threats to Delta mudwort include habitat destruction. Freshwater emergent marsh  
20 habitat found along portions of Old and Middle Rivers, Latham Slough, and Empire Cut  
21 represent suitable habitat for this species. This species was not observed during the  
22 2005 surveys.

23 *Delta Tule Pea (Lathyrus jepsonii var. jepsonii)*

24 Delta tule pea is a CNPS list 1B plant (rare, threatened, or endangered in California and  
25 elsewhere), found in freshwater and brackish marshes and seasonal wetlands with  
26 cattails, Suisun Marsh aster (*Aster lentus*), and rushes (*Juncus* spp). Most of its  
27 distribution is restricted to the Delta at elevations of 0 to 13 feet. Its blooming period is  
28 from May through September. The Delta tule pea is threatened by agriculture, water  
29 diversions, and erosion. Freshwater emergent marsh habitat found along portions of  
30 Old and Middle Rivers, Latham Slough, and Empire Cut and seasonal wetlands found  
31 along the proposed alignment could provide suitable habitat for this species. This  
32 species was not observed during the 2005 surveys.

**Table 2-2: Special Status Species Potentially Occurring Within the Project Vicinity**

Common Name	Scientific Name	Status <sup>2</sup> Fed/CA/other	Potential Location
Bristly sedge	<i>Carex comosa</i>	--/--/1B	Empire Cut, Latham Slough, Middle River, Old River
Delta mudwort	<i>Limosella subulata</i>	---/---/2	Empire Cut, Latham Slough, Middle River, Old River
Delta tule pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	---/---/1B	Empire Cut, Latham Slough, Middle River, Old River
Eel-grass pondweed	<i>Potamogeton zosteriformis</i>	--/--/2	Empire Cut, Latham Slough, Middle River, Old River
Marsh skullcap	<i>Scutellaria galericulata</i>	---/---/2	Empire Cut, Latham Slough, Middle River, Old River
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	---/SR/1B	Empire Cut, Latham Slough, Middle River, Old River
Rose mallow	<i>Hibiscus lasiocarpus</i>	---/---/2	Empire Cut, Latham Slough, Middle River, Old River
Suisun marsh aster	<i>Aster lentus</i>	---/---/1B	Empire Cut, Latham Slough, Middle River, Old River
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT/---/---	Naturalized Area on McDonald Island
Delta smelt	<i>Hypomesus transpacificus</i>	FT/ST/---	Empire Cut, Latham Slough, Middle River, Old River
Fall/late fall-run chinook salmon	<i>Onchorynchus tshawytscha</i>	FC/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Green sturgeon	<i>Acipenser medirostris</i>	FSC/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Longfin smelt	<i>Spirinichus thaleichthys</i>	FSC/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Pacific lamprey	<i>Lampetra tridentata</i>	FSC/---/---	Empire Cut, Latham Slough, Middle River, Old River
River lamprey	<i>Lampetra ayresi</i>	FSC/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Sacramento splittail	<i>Pogonichthys macrolepidorus</i>	--/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Spring-run chinook salmon	<i>Onchorynchus tshawytscha</i>	FT/ST/---	Empire Cut, Latham Slough, Middle River, Old River
Steelhead, Central Valley ESU	<i>Onchorynchus mykiss</i>	FT/---/---	Empire Cut, Latham Slough, Middle River, Old River
Winter-run chinook salmon	<i>Onchorynchus tshawytscha</i>	FE/SE/---	Empire Cut, Latham Slough, Middle River, Old River
Giant garter snake	<i>Thamnophis gigas</i>	FT/ST/--	McDonald and Bacon Island Main Drainage Canals

Common Name	Scientific Name	Status <sup>2</sup> Fed/CA/other	Potential Location
Western pond turtle	<i>Emmys (Clemmys) marmorata marmorata</i>	FSC/CSC/---	Empire Cut, Latham Slough, Middle River, Old River
Burrowing owl	<i>Athene cunicularia</i>	---/CSC/---	River levees
California black rail	<i>Lateralhus jamaicensis coturniculus</i>	---/ST/---	Empire Cut, Latham Slough, Middle River, Old River
Great blue heron	<i>Ardea hero dias</i>	---/CS/---	Empire Cut, Latham Slough, Middle River, Old River
Swainson's hawk	<i>Buteo swainsoni</i>	---/ST/---	Agricultural fields
Tricolor blackbird	<i>Agelaius tricolor</i>	---/CSC/---	Empire Cut, Latham Slough, Middle River, Old River

## Notes:

- 1 Special Status Species: Animals that were included in this table have a ranking of CSC or higher. Special-status plants that were included in this table have a ranking of 1B or higher. This species list came from the California Natural Diversity Database query, for lands within five miles of the Project site.
- 2 STATUS:  
FE = federally Endangered  
FT = federally Threatened  
FC = Federal Candidate for Listing  
FSC = Federal Species of Concern  
  
SE = State-listed Endangered  
ST = State-listed Threatened  
SR = State-listed as Rare  
CSC = CDFG Species of Special Concern  
  
1B = CNPS Ranking. Defined as plants that are rare, Threatened or Endangered in California and elsewhere.  
2 = CNPS Ranking. Defined as plants that are rare, Threatened or Endangered in California, but are more common elsewhere.

1 *Eel-grass pondweed (Potamogeton zosteriformis)*

- 2 Eel-grass pondweed is a CNPS list 2 plant, that blooms from June through July. Eel-
- 3 grass pondweed is an aquatic herb that generally inhabits freshwater ponds, lakes, and
- 4 streams at elevations less than 4,265 feet, and occurs within aquatic habitats
- 5 throughout the Central Valley. The open water environments of Old River, Middle River,
- 6 Latham Slough, and Empire Cut could provide suitable habitat for this species. This
- 7 species was not observed during the 2005 surveys.

1    *Marsh Skullcap (Scutellaria galericulata)*

2    Marsh skullcap is a CNPS list 2 plant that blooms from June through September.  
3    Suitable habitat for marsh skullcap includes marshes and swamps, lower montane  
4    coniferous forests, and meadows and seeps, at elevations between 0 to 6,890 feet.  
5    Freshwater emergent marsh habitat found along portions of Old and Middle Rivers,  
6    Latham Slough, and Empire Cut provides marginal habitat for this species. This  
7    species was not observed during the 2005 surveys.

8    *Mason's Lilaeopsis (Lilaeopsis masonii)*

9    Mason's lilaeopsis is State listed as rare, and a CNPS list 1B plant. It is found in tidal  
10   freshwater and brackish marshes and riparian scrub, with muddy or silty soil formed  
11   through river deposition or riverbank erosion. Endemic to California, Mason's lilaeopsis  
12   is known to occur in six counties. Threats are many and include erosion, channel  
13   stabilization, developing flood control projects, recreation, agriculture, shading resulting  
14   from marsh succession and competition with non-native plants. Elevations range from 0  
15   to 32 feet and it blooms from April through November. This species was found during  
16   June 2005 surveys along the western side of Bacon Island.

17   *Rose Mallow (Hibiscus lasiocarpus)*

18   Rose mallow is a CNPS list 2 plant that blooms from June through September. Threats  
19   include development, agriculture, recreation, and channelization of the Sacramento  
20   River and its tributaries. This perennial herb is found in freshwater marshes and  
21   swamps, preferring moist freshwater-soaked riverbanks and low peat islands in sloughs.  
22   Elevations range from 0 to 500 feet. There are a number of recorded occurrences of  
23   rose mallow within the vicinity of the proposed alignment along the eastern end of Palm  
24   Tract and the western end of Bacon Island. This species was found during June 2005  
25   surveys along the western side of Bacon Island, and along the eastern side of Palm  
26   Tract.

27   *Suisun Marsh Aster (Aster lentus)*

28   Suisun Marsh aster is a CNPS list 1B plant that blooms May through November. A  
29   species endemic to the Delta, this perennial herb is most often seen along sloughs with  
30   reeds, bulrush, blackberry and cattails in brackish and freshwater marshes and  
31   swamps. Threats to this plant include marsh habitat alteration and loss. Elevations



range from 0 to 10 feet. Freshwater emergent marsh habitat found along portions of Old River, Middle River, Latham Slough, and Empire Cut represent potential suitable habitat for this species. This species was not observed during the 2005 surveys.

#### Special-Status Wildlife

##### *Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)*

The valley elderberry longhorn beetle (VELB) is a federally Threatened species that occurs throughout the year in riparian woodlands and other Central Valley habitats containing elderberry shrubs (*Sambucus* spp.), upon which the VELB is completely dependent for all stages of its life cycle. All elderberry shrubs within the known range of the VELB, which have one or more stems with diameters of one inch or greater at ground level, are considered potential habitat for this species. Although typically associated with the Central Valley, *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999) recommends surveys for this species in all or portions of 31 counties in California. Elderberry shrubs were found on the naturalized habitat on McDonald Island, east of the pipeline route.

##### *Chinook Salmon (Oncorhynchus tshawytscha)*

Chinook are relatively common within the Sacramento-San Joaquin River System. Adult and juvenile chinook may move through the Project area on their way to and from the ocean, but there are no spawning areas within the Project area. The only extant run of chinook in the San Joaquin River is a fall run that spawns in the Tuolumne River (Moyle 2002). There is no habitat within the Project area that would be suitable for long-term residence of adults or juveniles.

**Fall/Late-fall Run** – Fall-run and late fall-run chinook are designated as candidates for listing under the Federal Endangered Species Act (FESA) and are listed by CDFG as a species of special concern (CDFG 2005). Migration of adult fall-run chinook salmon occurs from June through December, peaking in September and October. Adult late-fall run chinook salmon migrate from October through April, with peak migration occurring in December (Yoshiyama 1998). Adults move through the Project area into spawning habitats of the Sacramento and San Joaquin Rivers. Salmon fry (juveniles) move downstream, and smolts migrate to the ocean when spring rains increase river flow, increase turbidity, and decrease temperatures (Moyle 2002). It is likely that the San

Joaquin River also once supported a late-fall run, but it is now believed extinct (Moyle 2002).

**Winter Run** – Winter-run chinooks are listed as Endangered under both the State and Federal ESAs (CDFG 2005). Critical habitat has been designated for winter-run chinook, but does not include the Project area (National Marine Fisheries Service 1993). Winter-run chinook return to the upper Sacramento River between December and July, but delay spawning until the spring and summer (April-August) (Moyle 2002). Juveniles spend five to nine months in the river and Sacramento-San Joaquin Estuary before entering the ocean (CDFG 2005).

**Spring Run** – Spring run chinook are listed as Threatened under the State and Federal ESAs (CDFG 2005). They occupy the Sacramento River between March and September and move upstream into the headwaters where they hold in pools, spawning between August and October (CDFG 2005). Juveniles emigrate from the tributaries from mid-November through June; however, some juveniles spend a year in the streams and emigrate as yearlings the following October (CDFG 2005).

*Delta Smelt (*Hypomesus transpacificus*)*

The Delta smelt was listed as a federally Threatened Species in March 1993 (USFWS 1993). Critical habitat for the species was designated in December 1994, and includes all the rivers within the proposed Project area (USFWS 1994). Delta smelt are tolerant of a wide range of salinity and typically rear in shallow, fresh or slightly brackish water estuaries. For a large part of its annual life span, this species is associated with the freshwater edge of the mixing zone. The Delta smelt prefers portions of the water column that have relatively low water velocities. Spawning season varies from year to year and may occur from late winter (February) to early summer (July), but mainly from April through May (Moyle 2002). Delta smelt have been found near Woodland Island in Old River (CDFG 2002c).

*Green Sturgeon (*Acipenser medirostris*)*

Green sturgeon are a Federal and State Species of Concern for a combination of reasons, including an increase in sport-fishing pressure, declining populations statewide, and limited biological information. They are found from the Bering Sea south to northern Mexico with the Sacramento River supporting the southern-most spawning population (Moyle 2002). Adult sturgeons move into the Sacramento River presumably

1 between February and May (USFWS 1995), primarily spawning in the Feather River  
2 (Moyle 2002). Juveniles migrate to the ocean in the summer and fall following their  
3 second year in fresh water (Moyle 2002). The Project area does not support spawning  
4 habitat for adult fish and there is no known population in the San Joaquin River. Young  
5 sturgeon may rear in the Delta on the way to the ocean, but use of the Project area is  
6 unknown and long-term residency is unlikely.

7 *Longfin Smelt (Spirinchus thaleichthys)*

8 Longfin smelt are a State and Federal Species of Concern primarily because of their  
9 long-term population decline, mostly attributed to export of water (Moyle 2002). They  
10 have been recorded from most of the larger estuaries along the California coast. Within  
11 the Delta, they are not often found upstream of Rio Vista in the Sacramento River or  
12 Medford Island in the San Joaquin River (Moyle 2002). This species is tolerant of  
13 salinities ranging from pure salt water to pure freshwater. Adults move into the upper  
14 estuary to spawn beginning in November and the spawning season lasts through June  
15 (Moyle 2002). Spawning occurs over substrates ranging from sand to rocks and  
16 includes aquatic plants (USFWS 1995). Juveniles are swept downstream into brackish  
17 water. Some of the rocky banks and areas of aquatic vegetation within the Project area  
18 could be classified as suitable spawning habitat for longfin smelt. Sampling conducted  
19 in 2002 at Station 915 near Woodward Island on Old River resulted in the capture of  
20 longfin smelt from the time surveys started in March through early May 2002 (CDFG  
21 2002a).

22 *Pacific Lamprey (Lampetra tridentata)*

23 Pacific lampreys are considered a Federal Species of Concern, primarily because the  
24 large populations that were once common along the California coast are significantly  
25 diminished (Moyle 2002). They are found in most of the larger rivers and streams along  
26 the Pacific Coast. Adults move into the rivers in late winter through the spring.  
27 Spawning occurs in late spring and early summer on gravel substrates well upstream  
28 from the estuary. Juveniles spend five to seven years in freshwater before migrating to  
29 the ocean. The Project area does not support spawning habitat for adult lamprey. A  
30 population of lamprey likely exists within the San Joaquin River, but this species is only  
31 found within the Project area during up and downstream migration.

1 *River Lamprey (Lampetra ayresi)*

2 River lamprey are considered a State and Federal Species of Concern, primarily  
3 because so little is known about their natural history and large areas of potential habitat  
4 have been lost upstream of dams (Moyle 2002). They are found in several larger rivers  
5 and streams along the Pacific Coast including the Delta and several other streams that  
6 flow into the San Francisco Bay (Moyle 2002). Adults move into the rivers to spawn in  
7 late spring and early summer on gravel substrates often well upstream from the estuary.  
8 Within the San Joaquin River System, spawning takes place primarily in the Tuolumne  
9 and Stanislaus Rivers. Juveniles spend three to five years in freshwater before  
10 migrating to the ocean. The Project area does not support spawning habitat for adult  
11 lamprey. A population of river lamprey is known from the San Joaquin River tributaries,  
12 but this species is likely only found within the Project area during up and downstream  
13 migration.

14 *Sacramento Splittail (Pogonichthys macrolepidotus)*

15 Sacramento splittail, a California Species of Special Concern, are endemic to Central  
16 Valley lakes, sloughs, and estuary environments (Moyle 2002). Within the San Joaquin  
17 River system they have been reported as far upstream as the confluence with the  
18 Merced River (USFWS 1995). More typically they are restricted to the north and  
19 western portions of the Delta, although their distribution can change depending on  
20 streamflows (Moyle 2002). They are very tolerant of low levels of dissolved oxygen,  
21 relatively high water temperatures, and changing salinities (Moyle 2002). Adults spawn  
22 over flooded vegetation between February and June. Areas of aquatic vegetation within  
23 the Project area, especially in Middle River, could be classified as suitable spawning  
24 habitat. Work for the Discovery Bay development indicated that this species had not  
25 been reported from this area of the Delta, but that suitable habitat existed (Contra Costa  
26 County 1994). Monitoring conducted at the Central Valley Project pumping station in  
27 Clifton Court Forebay resulted in the capture of Sacramento splittail in the spring of  
28 2002 (CDFG 2002b).

29 *Steelhead (Oncorhynchus mykiss)*

30 Central Valley steelhead were federally listed as a Threatened Species in March 1998  
31 (NMFS 1998) and critical habitat was designated in September, 2005 (NMFS 2005).  
32 This Evolutionarily Significant Unit (ESU) includes all naturally spawned populations of  
33 steelhead in the Sacramento and San Joaquin rivers and their tributaries. Steelhead

begin their migration from the ocean when winter rains provide large amounts of cold water for migration and spawning. They typically spawn in mainstem river tributaries, often long distances from the ocean. Juvenile steelhead generally spend one to three years in freshwater before migrating to the ocean (Moyle 2002). With the possible exception of a small population in the lower Stanislaus River, steelhead appear to have been extirpated from the San Joaquin River system (Moyle 2002). The Project area does not support spawning habitat for adult fish or rearing habitat for juvenile steelhead. Additionally, the populations of steelhead once known to exist in the San Joaquin River are now believed extinct (Moyle 2002). There may be the occasional stray into the Project area from the Sacramento River, but long-term residency is unlikely.

*Giant Garter Snake (Thamnophis gigas)*

The giant garter snake (GGS) is a Federal and State Threatened Species. This highly aquatic garter snake prefers freshwater marshes and low gradient streams, but has adapted to drainage canals and irrigation ditches. In addition to aquatic habitat, GGS need adequate cover for predator avoidance, openings in waterside vegetation for basking and higher upland habitat for winter hibernation. Threats to GGS include loss and degradation of habitat. Suitable habitat for GGS likely did not occur in the Delta (Leidy 1992). Freshwater marsh habitat in Old River, Middle River, Latham Slough, and Empire Cut and the more naturalized irrigation ditches on the islands could provide suitable habitat for this species. This species was not observed during the 2005 surveys.

*Western Pond Turtle (Emmys (=Clemmys) marmorata)*

The western pond turtle is a CDFG Species of Concern. This aquatic turtle inhabits ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation, and requires areas with suitable basking sites and upland habitat for egg-laying. One to two clutches of 3 to 11 eggs are laid from June through August. Threats to this species include alteration, loss, and fragmentation of habitat as a result of urban and agricultural development. Old River, Middle River, Latham Slough and Empire Cut could provide potential suitable habitat for this species. This species was not observed during the 2005 surveys.

1 *California Black Rail (Laterallus jamaicensis coturniculus)*

2 The California black rail is listed as a State Threatened Species. It inhabits tidal salt  
3 marshes bordering larger bays, or other freshwater and brackish marshes, at low  
4 elevations. This sparrow size bird is blackish in color with a small black bill, a back  
5 speckled with white, and a nape of deep chestnut brown. It nests in or along the edge  
6 of marshes with a clutch size of 6 to 10. Threats to the California black rail include loss  
7 and degradation of its habitat due to water and flood-control projects, land-use changes,  
8 agriculture, and livestock grazing. Old River, Middle River, Latham Slough, and Empire  
9 Cut could provide potential suitable habitat for this species. This species was not  
10 observed during the 2005 surveys.

11 *Great Blue Heron (Ardea herodias)*

12 The great blue heron is not a State or Federal listed Species but is listed on the CDFG  
13 Special Animals list. This heron is a colonial nester in tall trees, cliff sides, and  
14 sequestered spots on marshes. The rookery sites are close in proximity to foraging  
15 habitat, such as marshes, lake margins, tide-flats, rivers and streams, and wet  
16 meadows. Clutch size ranges from three to seven eggs. Great blue herons are  
17 commonly seen foraging in and around the Project site. A heron rookery is located two  
18 miles to the south of the Project site on a small island in Middle River (CDFG 2005).

19 *Swainson's Hawk (Buteo swainsoni)*

20 Swainson's hawk is a State Threatened Species. It breeds in stands with few trees in  
21 juniper-sage flats, riparian areas, or oak savannah adjacent to suitable foraging habitat  
22 such as grasslands, alfalfa or grainfields with rodent populations. Threats to  
23 Swainson's hawk include development, resulting in the loss of foraging and nesting  
24 habitat. A nest site has been recorded approximately 1.5 miles south of the Project  
25 area (CDFG 2005). The agricultural fields within the Project site represent suitable  
26 foraging habitat for Swainson's hawk. This species was not observed during the 2005  
27 surveys.

28 *Burrowing Owl (Athene cunicularia)*

29 Burrowing owl is listed as a State Species of Special Concern and a "fully-protected"  
30 raptor. Burrowing owls feed on rodents, small reptiles, and large insects in annual  
31 grasslands, pastures, and ruderal vegetation. They breed between March and August

1 in communal burrow colonies that they have taken over from ground squirrels and other  
2 burrowing mammals. The closest recorded occurrence for burrowing owl is  
3 approximately six miles west of the proposed Project. The levee banks on the Project  
4 site could provide marginal nesting habitat for this species, but none were observed  
5 during the 2005 surveys.

6 *Tricolored Blackbird (Agelaius tricolor)*

7 The tricolored blackbird is listed as a CDFG and Federal Species of Concern. It is also  
8 listed as a Fish and Wildlife Service Migratory Non-game Birds of Management  
9 Concern, and is on the Audubon Society's Watch List for California. Although tricolored  
10 blackbirds occur sparingly in northwestern Baja California and south central Oregon,  
11 they are primarily endemic to the Central Valley and coastal valleys of California. They  
12 are a highly gregarious bird, forming large flocks in both breeding and non-breeding  
13 seasons. Nests are built near or over water, and occasionally in agricultural fields.  
14 Recently, tricolored blackbirds have displayed tendencies toward increased nesting in  
15 patches of blackberry, willows, mustard, thistles, nettles, and even grasses. The  
16 freshwater emergent marsh habitat along Old River, Middle River, Latham Slough, and  
17 Empire Cut represents potential suitable habitat for this species. This species was not  
18 observed during the 2005 surveys.

19 Sensitive Habitats

20 *Coastal and Valley Freshwater Marsh*

21 Coastal and valley freshwater marsh is dominated by perennial emergent plants,  
22 primarily tule (*Schoenoplectus* spp.) and cattail (*Typha* spp.), from three to six feet tall  
23 that often form completely closed canopies. It occurs in quiet (lacking significant current  
24 or tides), permanently flooded fresh water and promotes the accumulation of deep,  
25 peaty soils. Characteristic species include sedges (*Carex lanuginosa* and *C. senta*),  
26 yellow nutgrass (*Cyperus esculentus*), tall flatsedge (*Cyperus. eragrostis*), spikerush  
27 (*Eleocharis* spp.), marsh pennywort (*Hydrocotyle verticillata* var. *triradiata*), water  
28 mudwort (*Limosella aquatica*), common reed (*Phragmites australis*), and bur-reed  
29 (*Sparganium eurycarpum* var. *eurycarpum*). This habitat is located occasionally along  
30 the coast and in coastal valleys near river mouths and around the margins of lakes and  
31 streams. Historically, this habitat type also occurred in the Delta. Historical marshes  
32 have been significantly degraded by agricultural development, which included draining  
33 and filling former wetlands, and levee bank stabilization practices, including riprap,

vegetation control (chemical and mechanical), and the introduction of non-native species. Valley freshwater marsh habitat occurs within Old and Middle Rivers, Latham Slough, and Empire Cut.

## **Regulatory Setting**

### **Federal**

#### **Federal Endangered Species Act (FESA)**

FESA was enacted in 1973. Under FESA, the Secretary of the Interior and the Secretary of Commerce, jointly, have the authority to list a species as Threatened or Endangered (16 USC 1533[c]). FESA is administered by both the National Marine Fisheries Service (NMFS) and the USFWS. NMFS is accountable for animals that spend most of their lives in marine waters, including marine fish, most marine mammals, and anadromous fish such as Pacific salmon. The USFWS is accountable for all other federally-listed plants and animals.

Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed Threatened or Endangered species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC, section 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

The Sacramento Fish and Wildlife Office maintains a list of “Species of Concern” that receive special attention from Federal agencies during environmental review, although they are not otherwise protected under FESA. Project-related impacts to such species would also be considered significant under the State CEQA Guidelines Section 15380 and would require mitigation.

Projects that would result in “take”<sup>1</sup> of any federally-listed Threatened or Endangered Species are required to obtain authorization from NMFS and/or USFWS through either

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<sup>1</sup> “Take” under the Federal definition means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.



section 7 (interagency consultation) or section 10(a) (incidental take permit) of FESA, depending on whether the Federal government is involved in permitting or funding the project. The section 7 authorization process is used to determine if a project with a Federal nexus would jeopardize the continued existence of a listed species and what mitigation measures would be required to avoid jeopardizing the species. The section 10(a) process allows take of Threatened or Endangered species or their habitat in non-Federal activities.

On January 5, 2006, the Applicant sent a Biological Summary letter to the USFWS, describing the Project, special status species that could occur within or in the vicinity of the proposed Project, and environmental consequences of the Project, ultimately concluding that the Project would not adversely affect any special status species. On February 3, 2006, the Applicant received concurrence from the USFWS that the proposed Project as designed would not likely result in “take” of the delta smelt or giant garter snake, or adversely affect delta smelt critical habitat.

## Federal Clean Water Act

### *Section 404*

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 404 of the CWA regulates activities that result in discharge of dredged or fill material into waters of the United States. The Corps is responsible for permitting certain types of activities affecting wetlands and “other” waters of the United States. Under section 404 of the CWA, the Corps has the authority to regulate activities that discharge fill or dredge material into wetlands or other waters of the U.S. The Corps implements the Federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland values or acres.

### *Section 401*

The State Water Resources Control Board (SWRCB) has authority over wetlands through section 401 of the CWA, which requires that an applicant for a section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain certification from the appropriate State agency stating that the fill is consistent with the State’s water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine

1 regional boards. The Central Valley Regional Water Quality Control Board  
2 (CVRWQCB) is the appointed authority for section 401 compliance in the proposed  
3 Project area. A request for certification or waiver is submitted to the regional board at  
4 the same time that an application is filed with the Corps. The regional board has 60  
5 days to review the application and act on it. Because no Corps permit is valid under the  
6 CWA unless “certified” by the state, these boards may effectively veto or add conditions  
7 to any Corps permit.

## 8 Rivers and Harbors Act

9 Under section 10 of the Rivers and Harbors Act, the Corps has jurisdiction over  
10 navigable waters of the U.S. to the historic limits of mean high water. Section 10  
11 requires that a permit be obtained from the Corps for all activities in navigable waters  
12 that involve excavating, filling, dredging, construction, or placement of an obstruction in  
13 or to a navigable water body. Section 10 jurisdiction extends to the entire surface and  
14 bed of all water bodies subject to tidal action (33 Code of Federal Regulations (CFR)  
15 329.12[b]).

## 16 Migratory Bird Treaty Act

17 The Federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) prohibits  
18 killing, possessing, or trading in migratory birds except in accordance with regulations  
19 prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of  
20 birds, and bird nests and eggs.

## 21 **State**

### 22 California Endangered Species Act

23 The California Endangered Species Act (CESA) was enacted in 1984. Under the  
24 CESA, the California Fish and Game Commission has the responsibility for maintaining  
25 a list of Threatened and Endangered Species. CDFG also maintains lists of Species of  
26 Special Concern for which impacts would be considered significant under the State  
27 CEQA Guidelines Section 15380 and could require mitigation. Pursuant to the  
28 requirements of CESA, an agency reviewing a proposed project within its jurisdiction  
29 must determine whether any State-listed Endangered or Threatened Species may be  
30 present in the project area and determine whether the proposed project would have a  
31 potentially significant impact on such species. In addition, CDFG encourages informal

1 consultation on any proposed project which may impact a candidate species. CESA  
2 prohibits the take of California listed animals and plants in most cases, but CDFG may  
3 issue incidental take permits under special conditions.

4 Fish and Game Code - Sections 3503, 3503.5, 3513

5 Fish and Game Code section 3503 states that it is unlawful to take, possess, or  
6 needlessly destroy the nests or eggs of any bird, except as otherwise provided by this  
7 code or any regulation made pursuant thereto. Fish and Game Code section 3503.5  
8 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it  
9 is unlawful to take or possess any migratory non-game bird as designated in the  
10 Migratory Bird Treaty Act. These regulations could require that elements of the  
11 proposed project (particularly vegetation removal or construction near nest trees) be  
12 reduced or eliminated during critical phases of the nesting cycle unless surveys by a  
13 qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed,  
14 subject to approval by CDFG and/or USFWS.

15 Fish and Game Code B Sections 3511, 4700, 5050, and 5515

16 Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515  
17 (fish) of the California Fish and Game Code designate certain species as “fully  
18 protected.” Fully protected species, or parts thereof, may not be taken or possessed at  
19 any time, and no provision of the California Fish and Game Code or any other law may  
20 be construed to authorize the issuance of permits or licenses to take any fully protected  
21 species. No such permits or licenses heretofore issued may have any force or effect for  
22 any such purpose, except that the California Fish and Game Commission may authorize  
23 the collecting of such species for necessary scientific research. Legally imported and  
24 fully protected species or parts thereof may be possessed under a permit issued by  
25 CDFG.

26 CDFG Lake and Streambed Alteration Agreements

27 Under sections 1600-1616 of the California Fish and Game Code, the CDFG prohibits  
28 activities that would “substantially divert or obstruct the natural flow of, or substantially  
29 change or use any material of the bed, channel, or bank of any river, stream and lake,  
30 or deposit or dispose of debris, waste or other material containing crumbled, flaked or  
31 ground pavement where it may pass into any river, stream or lake” without consulting  
32 with CDFG. Notification is required prior to any such activities and CDFG will issue an

1 Agreement with any necessary mitigation to ensure protection of the State's fish and  
2 wildlife resources.

### 3 CDFG Wetlands Protection Regulations

4 The CDFG derives its authority to oversee activities that affect wetlands from a number  
5 of pieces of legislation. This authority includes sections 1600-1616 of the Fish and  
6 Game Code (lake and streambed alteration agreements), section 30411 of the  
7 California Coastal Act (CDFG becomes the lead agency for the study and identification  
8 of degraded wetlands within the Coastal Zone), CESA (protection of State listed species  
9 and their habitats - which may include wetlands), and the Keene-Nejedly California  
10 Wetlands Preservation Act of 1976 (states a need for an affirmative and sustained  
11 public policy program directed at wetlands preservation, restoration, and enhancement).

12 In general, the CDFG asserts authority over wetlands within the State either through  
13 review and comment on Corps section 404 permits, review and comment on the CEQA  
14 documents, preservation of State listed species, or through lake and streambed  
15 alteration agreements.

### 16 State CEQA Guidelines Section 15380

17 Although Threatened and Endangered Species are protected by specific Federal and  
18 State statutes, the State CEQA Guidelines section 15380(b) provides that a species not  
19 listed on the Federal or State list of protected species may be considered rare or  
20 endangered if the species can be shown to meet certain criteria. These criteria have  
21 been modeled after the definition in FESA and the section of the California Fish and  
22 Game Code dealing with rare or endangered plants and animals, and allows a public  
23 agency to undertake a review to determine if a significant effect on species that have  
24 not yet been listed by either the USFWS or CDFG, i.e., species of concern, would  
25 occur. Whether a species is rare, Threatened, or Endangered can be legally significant  
26 because, under the State CEQA Guidelines section 15065, an agency must find an  
27 impact to be significant if a project would "substantially reduce the number or restrict the  
28 range of an Endangered, rare, or Threatened species." Thus, the CEQA provides an  
29 agency with the ability to protect a species from a project's potential impacts until the  
30 respective government agencies have an opportunity to designate the species as  
31 protected, if warranted.

1 California Native Plant Society

2 CNPS maintains an inventory of special-status plant species, in four lists of varying  
3 rarity. Plants listed as rare or endangered by the CNPS, but which have no designated  
4 status or protection under Federal or State-endangered species legislation, are defined  
5 as follows:

6 List 1A Plants Believed Extinct.

7 List 1B Plants Rare, Threatened, or Endangered in California and elsewhere.

8 List 2 Plants Rare, Threatened, or Endangered in California, but more numerous  
9 elsewhere.

10 List 3 Plants About Which More Information is Needed - A Review List.

11 List 4 Plants of Limited Distribution - A Watch List.

12 In general, plants appearing on CNPS List 1 or 2 are considered to meet the State  
13 CEQA Guidelines section 15380 criteria and impacts on these species are analyzed in  
14 this Initial Study/Mitigated Negative Declaration.

15 **Local**

16 San Joaquin and Contra Costa Counties have General Plans with elements that  
17 address biological resources. San Joaquin County published the “San Joaquin County  
18 General Plan 2010 Volume I: Policies/Implementation” in July 1992. Contra Costa  
19 County published “Contra Costa County General Plan 1995-2010” in July 1996.

20 San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

21 San Joaquin County and other participating agencies have prepared the San Joaquin  
22 Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) with the goal of  
23 protecting special-status plants and wildlife and their habitats, while allowing for planned  
24 growth in the County. This protection is accomplished through identification of  
25 important habitats and habitat features to aid in the development of protection areas,  
26 and the establishment of funding mechanisms through which project proponents can  
27 provide replacement habitat while enabling them to meet their no net loss of habitat  
28 value goals. SJMSCP participants under the SJMSCP may conduct SJMSCP permitted

activities that result in or could result in “incidental take” of listed species and other unlisted species should they become listed. Participation in the SJMSCP is voluntary.

### Transmission Agency of Northern California Conservation Easement

The Transmission Agency of Northern California (TANC) granted a conservation easement to the CDFG on a portion of Palm Tract in accordance with the California-Oregon Transmission Project Waterfowl Mitigation Plan. The easement covers approximately 1,080 acres, of which 330 acres are designated as Waterfowl Management Units, 739 acres are designated as Farm Units, and 7 acres are designated for Recreation. Portions of the easement are also designated for the Reclamation District. The purpose of the conservation easement is to protect the waterfowl habitat values by restricting the use of the property to the production of crops, recreation, hunting, and waterfowl habitat preservation. Additional uses and practices could be allowed with approval from CDFG as long as they do not adversely affect the waterfowl management units. Approximately 2,500 feet of the proposed Project are located within the TANC conservation easement.

### Impact Discussion

a, b. The proposed Project site supports habitat for eight special status plants, one special status invertebrate, 10 special status fish, two special status reptiles, and five special status birds.

#### **Impact BIO-a, b-1: Construction activities could adversely impact special status plant species and freshwater emergent marsh habitat.**

Habitat for the special status plant species is limited to the freshwater emergent marsh habitat found along Empire Cut, Latham Slough, Middle River, and Old River which would be crossed using HDD technology. Impacts to both the special status plants and the freshwater emergent marsh habitat type could occur during a frac-out. The Applicant has designed the HDDs such that the HDD would start and end approximately 2,100 and 2,300 feet, respectively, from the toe of the levees and pipe would be installed a minimum of 60 feet below the bed and banks of the waterways on the Empire Cut/Latham Slough, Middle River, and Old River bores. The Applicant would use hole intersect operations and 100 feet of steel conductor casing to minimize the potential for a frac-out. In addition, they have prepared a Contingency Plan for Frac-outs during HDD that

1 includes methods to re-establish drilling fluid circulation and contain the drilling  
2 fluid in the event of a frac-out.

3 Mason's lilaopsis and rose mallow were documented growing in the rip-rap  
4 along the levees on Bacon Island and Palm Tract during the 2005 surveys  
5 conducted by EIP Associates. Impacts to these plants would largely be avoided  
6 due to the HDD construction technique, but the plants could be trampled by foot  
7 traffic during construction, resulting in a *potentially significant impact*.  
8 Implementation of the mitigation measure below would reduce this impact to a  
9 ***less-than-significant level*** by educating the construction crew on sensitive  
10 biological resources and fencing off the areas with special status plants. Due to  
11 the disturbed nature of the levee banks, and the use of the levees by the public,  
12 it is unnecessary to fence off the levee bank habitat as potential special-status  
13 species habitat.

14 **Mitigation Measure BIO-a, b-1**

15 The Applicant shall conduct Worker Environmental Awareness Program (WEAP)  
16 training for construction crews (primarily crew and construction foreman) before  
17 construction activities begin. The WEAP shall include a brief review of the special  
18 status species and other sensitive resources that could occur in the proposed  
19 Project site (including their life history and habitat requirements and what portions  
20 of the proposed Project area they may be found in) and their legal status and  
21 protection. The program shall also cover all mitigation measures, environmental  
22 permits and proposed Project plans, such as the Stormwater Pollution Prevention  
23 Plan (SWPPP), best management practices (BMPs), erosion control and  
24 sediment plan, and any other required plans. During WEAP training, construction  
25 personnel shall be informed of the importance of avoiding ground-disturbing  
26 activities outside of the designated work area. The designated biological monitor  
27 shall be responsible for ensuring that construction personnel adhere to the  
28 guidelines and restrictions. WEAP training sessions shall be conducted as needed  
29 for new personnel brought onto the job during the construction period.

30 **Mitigation Measure BIO-a, b-2**

31 Prior to any construction activities on the site, a protective fence shall be installed  
32 a minimum of one foot (or greater, if feasible) from the edge of all special status  
33 plant populations to be avoided in the immediate vicinity of the proposed

construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all special status plant populations have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.

#### Valley Elderberry Longhorn Beetle

Elderberry shrubs have been documented on McDonald Island, in the more naturalized area owned by PG&E, just east of the alignment. They are outside of the construction area, but in proximity to where workers could be. The naturalized area is separated from the construction activities by an agricultural road and a narrow waterway. This entire area will be fenced under Mitigation Measure BIO-c-1, thus preventing incidental impacts to the elderberry shrubs. This potential impact would be avoided and no additional mitigation is required.

#### Special Status Fish

Old River, Middle River, Latham Slough, and Empire Cut provide habitat for a number of resident and migratory fish species as discussed above. Because the pipeline would be installed by HDD techniques under the waterways, no loss of aquatic habitat would occur as a result of Project construction and/or operation. However, HDD activities could result in the inadvertent release of drilling mud containing bentonite into the waterways as a result of a frac-out under the riverbed. While bentonite is a non-toxic substance, its inadvertent release into waterways could adversely impact aquatic species, smothering fish and their eggs, with the fine bentonite particles.

The Applicant has designed the Project such that the pipe would be installed a minimum of 60 feet below the beds of the waterways and would include hole intersect operations, the use of 100 feet of steel conductor casing and preventative training. Further, the HDDs would occur during the South Delta Construction window of June 1 to November 30 (Stewart 2005), when few special-status fish would likely be in the Project area.

Because the Project has been designed to reduce the likelihood of a frac-out and HDD activities would occur when special-status fish species are not expected to be in the Project area, this impact is ***less than significant***.



1        Special Status Reptiles

2        Western pond turtles could use Empire Cut, Latham Slough, Old River, Middle  
3        River, and associated freshwater marsh habitat. The closest recorded  
4        occurrence of western pond turtle is approximately one mile north of the Project  
5        area. Any potential habitat would be avoided through the use of HDD  
6        technology, which would install the pipe a minimum of 60 feet below the beds of  
7        the waterways. Because the potential habitat would be avoided, **no impact**  
8        would occur to western pond turtles.

9        The Delta did not historically support GGS habitat given the flooding events and  
10       salinity levels (Leidy 1992). Further, GGS would not use the open water channel  
11       habitat associated with Old River, Middle River, Empire Cut, and Latham Slough.  
12       However, there is a recorded occurrence for GGS approximately 3.5 miles north  
13       of where the proposed Project would cross Latham Slough and Empire Cut.  
14       While they have never been documented within the proposed Project area,  
15       suitable habitat does occur along the large reclamation ditches that traverse  
16       McDonald and Bacon Islands. These ditches would be crossed using HDD  
17       techniques where the pipeline would start and end a minimum of 200 feet from  
18       the center of the ditches and would be approximately 35 feet below the bottom of  
19       the ditches. Because the potential habitat would be avoided, **no impact** would  
20       occur to GGS.

21       Special Status Birds (Foraging Habitat)

22       As discussed under Item 2.3.2a,c, the proposed Project would result in the  
23       temporary loss of agricultural production during Project construction, which could  
24       temporarily impact Swainson's hawk and other raptor foraging habitat  
25       (agricultural land). The temporary impact (approximately 100 acres) is  
26       considered to be insignificant due to the relatively small impact area and the  
27       expansive area of surrounding land that consists of equally suitable Swainson's  
28       hawk foraging habitat (approximately 40,000 acres of foraging habitat on the  
29       islands crossed by the proposed Project). This impact is **less than significant**  
30       and no mitigation is required.

c. **Impact BIO-c-1: Construction activities could adversely impact waters of the U.S.**

Project construction would cross under four waterways - Old and Middle Rivers, Latham Slough, and Empire Cut - that are considered Waters of the U.S., and under the regulatory authority of the Corps. Impacts to these waterways would be avoided by using HDD technology. Permits from the Corps, CSLC, and CDFG could be required to cross these waterways and the Applicant would abide by any conditions set forth in the permits. In addition, measures in the Contingency Plan for frac-out during HDD as described in section 1.7.2 would greatly reduce the likelihood of a frac-out, the only potential impact associated with this construction technique.

There are two drainage canals and 34 irrigation ditches within the agricultural fields that are considered waters of the U.S. by the Corps. The drainage canals and 29 ditches would be crossed during HDD activities and five would be open trenched during construction. Trenching through the ditches would constitute a temporary impact, but once the pipeline has been installed, the ditches would be returned to their original condition. To cover these temporary impacts to ditches, the Applicant would obtain a Nationwide Permit #12 for Utility Line Activities. This permit covers activities required for the construction, maintenance and repair of utility lines and associated facilities in waters of the U.S. The Applicant would comply with any terms and conditions set forth in the Nationwide Permit 12, reducing impacts on the agricultural ditches to ***less than significant***.

In addition to waters of the U.S., there are seasonal wetlands on McDonald and Bacon Islands and Palm Tract, all of which would be under the Corps jurisdiction. The naturalized habitat on McDonald Island also contains wetland habitat that is separated from the temporary use area by an agricultural access road. While wetland areas occur adjacent to the agricultural fields and would be avoided through a combination of HDD techniques and Project design, they could be inadvertently impacted by the accidental release of soil or other material during construction activities, which would be a *potentially significant impact*. Should any placement of fill material in the seasonal wetlands occur, a permit would be required from the Corps. The Nationwide Permit #12 would also address these temporary impacts. Implementation of the mitigation measure below would

1 reduce this impact to a ***less-than-significant level*** by restricting access to the  
2 wetland area.

3 **Mitigation Measure BIO-c-1**

4 Prior to any construction activities on the site, a protective fence shall be installed  
5 a minimum of one foot (or greater, if feasible) from the edge of all wetland habitat  
6 to be avoided in the immediate vicinity of the proposed construction areas. Prior  
7 to initiation of construction activities, a qualified biologist shall inspect the  
8 protective fencing to ensure that all wetland features have been appropriately  
9 protected. No encroachment into fenced areas shall be permitted during  
10 construction and the fence shall remain in place until all construction activities  
11 have been completed.

12 **Mitigation Measure BIO-c-2**

13 The Applicant shall provide a copy of the "Contingency Plan, Inadvertent Release  
14 Prevention and Response Plan for Non-Hazardous Drilling Fluid" to the U.S.  
15 Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine  
16 Fisheries Service, Central Valley Regional Water Quality Control Board, and the  
17 California Department of Fish and Game for their review and approval. This may  
18 occur during the permitting process.

- 19 d. The Old and Middle Rivers, Latham Slough and Empire Cut represent suitable  
20 habitat for migrating fish. Construction around these rivers would be completed  
21 using HDD techniques, limiting the amount of personnel and equipment in the  
22 aquatic habitat. Minor irrigation ditches would be trenched and anti-  
23 erosion/siltation measures would be employed to restrict discharge into the  
24 rivers. The Project would not create any barrier to fish migration because the  
25 pipeline would be located beneath the river channels.

26 The Applicant would complete all HDD activities by November 30 in accordance  
27 with the NMFS suggested South Delta Construction Window of June 1 through  
28 November 30 (Stewart 2005) to avoid impacts to migrating fish. This, in  
29 combination with the Contingency Plan for frac-out during HDD activities, would  
30 reduce the likelihood of fish being impacted should a frac-out occur. Therefore,  
31 construction and operation of the proposed Project would not impact movement  
32 of migratory fish.

**Impact BIO-d-1: Construction activities could interfere with the movement of native resident wildlife species.**

Within the agricultural lands, mortality of less mobile species, temporary alteration of habitat, and localized displacement of mobile species could occur with construction of the pipeline. Some movement of common wildlife species across the construction right-of-way could be temporarily inhibited as wildlife could become entrapped in trenches. This would result in a *potentially significant impact* that could be reduced to ***less than significant*** with implementation of the following mitigation measure.

**Mitigation Measure BIO-d-1**

The Applicant shall provide all excavated, steep-walled holes and trenches in excess of 3 feet in depth with one or more escape ramps constructed of earthen fill or a wood/metal plank. If wildlife proof barricade fencing is available, it should also be used where appropriate. Escape ramps shall be less than a 45° angle. Trenches and pits shall be inspected for entrapped wildlife each working day before construction activities resume. Before such pits and trenches are filled, they shall be thoroughly inspected for entrapped animals. If any wildlife species are discovered, they should be allowed to escape voluntarily, without harassment, before construction activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All construction pipes, culverts, or similar structures that are stored at a construction site overnight shall be thoroughly inspected for trapped animals before the pipe is buried, capped, or otherwise used or moved. Pipes laid in trenches overnight shall be capped. If an animal is discovered inside a pipe, that section of pipe shall not be capped or buried until the animal has escaped. The Applicant shall not use plastic mono-filament netting (erosion control matting) or similar material because amphibians and snakes may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

- e, f. The portion of the proposed Project in San Joaquin County falls under the SJMSCP. The SJMSCP is intended to comprehensively minimize and mitigate impacts to plant, fish and wildlife habitat. SJMSCP participants under the SJMSCP may conduct SJMSCP permitted activities that result in or could result

1 in “incidental take” of listed species and other species protected under the plan.  
2 The Applicant is not planning to participate in the SJMSCP but would obtain any  
3 necessary incidental take permits directly through the USFWS and CDFG.

4 Both San Joaquin and Contra Costa Counties have General Plans that contain  
5 goals and policies that are generally designed to protect natural resources such  
6 as riparian habitat, open space, woodlands, wetlands, and species listed as  
7 Threatened or Endangered and other sensitive species. Because the proposed  
8 Project is designed to avoid and minimize any potential effects on natural  
9 resources, it would not conflict with either the San Joaquin or Contra Costa  
10 County General Plans.

11 **Impact BIO-e, f-1: Construction and operation of the valve lot on Palm**  
12 **Tract would result in the loss of land protected under a conservation**  
13 **easement.**

14 The proposed Project would end on Palm Tract on a parcel covered under a  
15 conservation easement granted by the TANC to CDFG as part of the “California-  
16 Oregon Transmission Project.” Preconstruction consultation has been initiated  
17 between the Applicant and the CDFG. The conservation easement states that  
18 installation of utility structures or lines are inconsistent uses; however, because  
19 the Line 57C pipeline would be buried and the valve lot is small in size, CDFG  
20 staff concurs that the proposed Project would not conflict with the purpose of the  
21 conservation easement (Burkholder 2006). Regardless, the proposed Project  
22 would result in temporary disturbance and the loss of land for the valve lot, which  
23 is a *potentially significant impact*. Implementation of the mitigation measure  
24 below would reduce this impact to a ***less-than-significant level***.

25 **Mitigation Measure BIO-e, f-1**

26 The Applicant shall provide a monetary compensation to the CDFG for  
27 disturbance on Palm Tract associated with the proposed Project at a minimum  
28 ratio of 1:1, or as determined in consultation with CDFG.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.5 CULTURAL RESOURCES.</b>				
<i>Would the project:</i>				
a. Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Information for the cultural resource portion of this section was obtained from the *Cultural Resources Survey for the Line 57 Reliability Project in San Joaquin and Contra Costa Counties, California* (Appendix F) which includes a geoarchaeological analysis, and the *Supplemental Cultural Resources Survey for the Line 57 Reliability Project in San Joaquin and Contra Costa Counties, California* (Appendix G), prepared by Applied Earthworks, Inc. Information for the paleontological resource portion of this section was obtained from the *Paleontologic Resources, Impacts and Mitigation, Pacific Gas & Electric Pipeline 57C, Revised Route, San Joaquin County, California*, prepared by C. Bruce Hanson in June, 2005 (Appendix H).

## Environmental Setting

### Physical Environment

The Project area lies within the Delta region of California, along the western edge of the Great Valley province. Before the Pliocene, the area's landscape was typical of the

1 Great Valley, with oak woodlands and savannah bordering the rivers. During the  
2 Pliocene, rising ocean levels flooded the area; as the valley's rivers emptied into the  
3 sea, their courses slowed and deposited sediments, thus forming the Delta marshlands.  
4 The waters eventually subsided, leaving a virtually landlocked Delta approximately 20  
5 miles from the San Francisco Bay and approximately 30 miles from the California  
6 coastline. Before reclamation began in the 1800s, the area was swampland crosscut by  
7 a maze of sloughs and channels.

8 The Delta held important resources for both prehistoric and historical residents. The  
9 estuarine habitat contains a wealth of fowl, fish, and other game. The sand mounds  
10 that dotted the wetlands provided high points for food processing stations or habitation  
11 sites. Early Euro-American settlers understood that the Delta's alluvial sediments could  
12 be transformed into rich farmland; they constructed levees and drainage systems to  
13 reclaim the swampland, which generally lies at or below sea level. In addition, the  
14 accumulation of organic material over geologic time created thick deposits of peat,  
15 which have made the Stockton area one of the major sources of natural gas in the state.

## 16 Cultural Overview

17 Habitation in the Central Valley predating the Early Period/Windmillar Pattern is  
18 evidenced by assemblages found near the Tulare and Buena Vista lakebeds as well as  
19 in the surrounding foothills and mountains. It is likely that most archaeological material  
20 in the Delta region dating to this early time is deeply buried under alluvium. As much as  
21 33 feet (10 meters) of sediments may have accumulated during the past 5,000 years.

## 22 *Ethnography*

23 The likely inhabitants of the Project vicinity were the Northern Valley Yokuts, whose  
24 territory extended south from Bear Creek near Stockton to the south side of the San  
25 Joaquin River past Mendota, east to the Sierra Foothills, and west to the Coast Range.  
26 Specifically, the Chulamni tribe occupied the area west of present-day Stockton. Given  
27 the fluidity of tribal borders, however, it is possible that the Plains Miwok, located north  
28 of the Yokuts, also used the area.

29 As with other Native American groups in the valley, the lifeways of the Northern Valley  
30 Yokuts were dramatically altered as a result of contact with Spanish explorers and  
31 missionaries, miners, ranchers, and other European immigrants who entered the valley  
32 after 1800. Population estimates for the eighteenth century put the number of Yokuts

1 living in the San Joaquin Valley at around 41,000. However, the introduction of  
2 European culture and new diseases proved devastating to the native population.  
3 Traditional lifestyles were diminished and numerous people died from disease.

4 Buried prehistoric and historic archaeological sites are commonly found within the  
5 Project area. One large prehistoric cemetery (CA-SJO-189) is located adjacent to the  
6 temporary use area on McDonald Island. The site contained more than 20 burials.  
7 Additional burial sites within 1.5 miles of the Project area include CA-CCO-141 (25  
8 burials), CA-CCO-148/H (2 burials), CA-CCO-150 (12 burials), and CA-CCO-678. No  
9 burial sites are recorded within the Project area.

## 10 *History*

11 The first recorded European encounter with the Yokuts occurred in 1772 when Pedro  
12 Fages led a group of soldiers through Tejon Pass into the San Joaquin Valley. During  
13 the late 1700s, the Spanish established a string of missions along the California Coast.  
14 Although initially insulated from the direct impact of the missions, the Northern Valley  
15 Yokuts no doubt had some contact with the Spanish. Mission San Jose was founded in  
16 1797, effectively establishing a Spanish presence along the Northern Valley Yokuts'  
17 western border. Gabriel Moraga led a group of Spanish explorers into the valley in  
18 1806 to locate new lands for missions, find and return runaway Indians, and relocate  
19 stolen livestock. Moraga is credited with naming several valley geographical features,  
20 including the San Joaquin and Stanislaus Rivers. Although Mexico's independence  
21 from Spain ended expansion of the missions in California by the early 1820s, European  
22 encroachment on the areas occupied by the indigenous peoples continued. In the late  
23 1820s, fur trappers began their forays into the California interior. Jedediah S. Smith  
24 passed through the area during a fur trapping expedition in 1827, and French Canadian  
25 trappers of the Hudson's Bay Company established a seasonal base at French Camp  
26 just south of present-day Stockton.

27 The gold rush triggered a mass exodus to California. Stockton, which could be reached  
28 via steamboat from San Francisco, served as the port of entry to the gold fields east of  
29 town. As the gold fervor subsided, former miners looked to other pursuits, and Stockton  
30 became an important shipping center for agricultural goods.

31 Early attempts by farmers in the late 1850s to reclaim the swampland west of Stockton  
32 confirmed the fertility of the soil, but their levees were largely ineffectual during times of  
33 flood. Large-scale, long-term reclamation required a capital investment beyond the



1 means of individual farmers. Taking advantage of a series of Federal and State  
2 reclamation acts, wealthy investors from San Francisco purchased large tracts of  
3 swampland at cheap prices with the intent to reclaim them for agricultural purposes.  
4 These landowners included George T. Roberts (Roberts Island), Henry Bacon (Bacon  
5 Island), James Haggin (Staten Island), T.H. Williams (Victoria Island), and the Sargent  
6 brothers (Bouldin and King Islands). Horse-drawn scrapers were used to build levees  
7 and dredge waterways, and much of the labor was provided by former rail workers.  
8 Many of these Chinese laborers were then retained to till the newly reclaimed soil.  
9 Construction proceeded on a trial and error basis, and the first levees often could not  
10 protect the reclaimed “islands” during times of flood. By the late 1870s, engineering  
11 methods had improved, and reclamation efforts apparently reached at least a moderate  
12 level of success.

13 Continual repair and maintenance of the peat soil levees led many landowners to sell  
14 their properties. By the 1910s and 1920s the property of the Delta was being sold or  
15 leased in smaller parcels to a larger number of individual farming operations. The  
16 introduction of such heavy machinery as the clamshell dredge spurred the construction  
17 of new levees and facilitated the maintenance of existing ones; peat was replaced with  
18 more stable sediment dredged from river bottoms. Most notably, the California Delta  
19 Farms Company, established by Lee Philips in 1907, reclaimed vast acreage for lease  
20 to farmers, including George Shima, who raised predominantly potato crops on Bacon,  
21 McDonald, and other Delta islands.

22 Within the Project vicinity, small communities arose at or near the convergence of  
23 transportation routes. Located along the waterway known as Middle River and the  
24 Atchison, Topeka and Santa Fe Railway, the town of Middle River served as an  
25 important shipping point and the site of an asparagus cannery as early as 1915.  
26 Similarly, the town of Holt lay at the intersection of the southern end of Whiskey Slough,  
27 the Santa Fe tracks, and the Delta Borden Highway (the precursor of State Route 4).  
28 Completed in 1915, the highway was the first paved roadway through the Delta and  
29 included a series of swing bridges spanning the numerous waterways of the  
30 marshlands. Located a few miles upstream from the town of Middle River, the Middle  
31 River Bridge (P-39-000474) was built in 1915 as part of this early transportation  
32 network; it remains today as a historically and architecturally significant structure.

33 In addition to its importance as a transportation center for agricultural and dairying  
34 interests, Holt became the focus of social activity in the San Joaquin Delta. Continual

1 improvement in transportation networks ironically lead to Holt's demise, as local  
2 residents found it easier to drive to nearby Stockton. SR-4 has since been rerouted  
3 0.5 mile south of its original path, and presently little remains of Holt except for a marina  
4 on Whiskey Slough and a nearby post office that still bears the town's name.

5 The initial pipeline of the Mokelumne Aqueduct (CA-SJO-286H) was completed in 1929.  
6 The system, which parallels the Santa Fe tracks through Holt and crosses the lower  
7 Delta islands, brings water from the Pardee Dam to the communities in Alameda and  
8 Contra Costa Counties. Additional pipelines were added in 1949 and 1963 to meet the  
9 growing water needs of the East Bay.

10 George Shima played an important role in the area's development as a farmer as well  
11 as a local leader. Shima managed large farms in the area totaling thousands of acres  
12 of land. In general, the management of such vast acreage was structured into camps,  
13 each headed by a foreman who oversaw the cultivation of 100-500 acres. Located near  
14 the waterways, the camps typically included a foreman's house, cookhouse, one or  
15 more boarding houses, and other ancillary structures, e.g. blacksmith or machine  
16 shops, in the larger camps. Camps housed from 20-50 men in small units to as many  
17 as 350-400 in larger complexes. Based on the size and number of structures, Camp 3  
18 (CA-SJO-213H) and Camp 10 ½ (CA-SJO-219H) on Bacon Island – two sites near the  
19 Project area – typify Shima's large and small complexes, respectively, and were  
20 evaluated for the National Register.

## 21 **Paleontological Resources**

22 Paleontological resources (fossils) are the remains or traces of prehistoric animals and  
23 plants. Fossils are important scientific and educational resources because of their use  
24 in documenting the presence and evolutionary history of particular groups of extinct  
25 organisms, reconstructing the environments in which these organisms lived, and  
26 determining the relative ages and geologic processes of the strata (sediment or rock  
27 layers) in which they occur.

1 **Environmental Setting**

2 Historical Geology of the Project Area

3 Assessment of the potential for paleontologically significant resources depends on a  
4 general understanding of the events and processes that created the local geologic and  
5 paleontologic record.

6 The Central Valley of California, including the Sacramento and San Joaquin River  
7 Valleys and the Delta between them, owes its existence to about 175 million years of  
8 repeated, slow down-warping of the earth's crust below it. Because the valley floor was  
9 near or below sea level for much of its geologic past, sediments carried by streams from  
10 the surrounding mountain ranges tended to accumulate in the low-gradient valley,  
11 occasionally burying remains of plants or animals that had accumulated on the surface.  
12 Cretaceous to Recent marine and non-marine deposits have accumulated in the valley  
13 to depths of five to ten kilometers. Exceptions to this general buildup of sediments  
14 occurred during several periods in the geologic past when sea level fell below the  
15 approximate elevation of the valley floor. Areas which had previously accumulated  
16 flood-borne sediments underwent soil development or erosion, though parts of the  
17 preceding sedimentary deposit would remain, usually near the adjacent higher lands.

18 Though often called the "Ice Age", the Pleistocene Epoch included interglacial periods  
19 with temperatures not unlike those of today. During the Pleistocene Epoch, which  
20 began about 1.8 million years ago, worldwide sea level fell and rose more than a dozen  
21 times as continental glacial ice accumulated and melted. The late Pleistocene geologic  
22 units are defined by the development of ancient soils and geomorphic terraces along  
23 the mountain foothills on both sides of the Central Valley during periods of low sea  
24 levels.

25 With the end of the last glaciation, and by most definitions also the end of the  
26 Pleistocene, seas again rose to their present level and led to the development of the  
27 historic (but pre-agricultural) features of the Delta: interconnected, often meandering  
28 natural channels, natural levees (often breached) flanking the channels, periodically or  
29 permanently flooded depressions bounded by the levees, and oxbow lakes and ponds  
30 in the depressions left by abandoned channels. The depressions supported growth of  
31 dense marshy vegetation whose remains built up as thick mats of peat. Because the  
32 beginning of peat deposition occurred near the end of the last world-wide glaciation, the  
33 age of the lowest peat should also approximate the date of the end of the Pleistocene.

Carbon-14 dating of the oldest recognized peat deposit has yielded an age estimate for this event of approximately 10,700 years, which generally agrees with other published dates for the end of the Pleistocene (and beginning of the “Recent” or “Holocene” Epoch).

The end of the Pleistocene marks a time of extinction of many of the larger mammals that had lived for thousands of years throughout North America. Elephant relatives (mammoth and mastodons), camels, horses, tapirs, giant ground sloths, saber-tooth cats, dire wolves, and brush ox were among the former California residents whose remains have not been found in deposits younger than late Pleistocene (except for horses which early Spanish explorers reintroduced into North America about 300 years ago).

Following the Pleistocene Epoch, the Delta surface was occupied by marshes and probably large ponds bounded by natural levees which formed along river channels. With human settlement since the mid-1800s, reinforcement of these levees allowed reclamation of former marshland and ponds for agriculture, and dredging improved access for water-based transportation. These operations involved redistribution of the natural sediment deposits, leaving historically disturbed sediments of varying thickness near the present Delta surface.

## **Regulatory Setting**

### **Federal**

#### **National Historic Preservation Act (NHPA)**

Federal regulations for cultural resources are primarily governed by section 106 of the NHPA of 1966, which requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council’s implementing regulations, “Protection of Historic Properties,” are found in 36 CFR Part 800. The goal of the section 106 review process is to offer a measure of protection to sites determined eligible for listing on the National Register of Historic Places (NRHP) based on the criteria found in 36 CFR Part 60, which state that eligible resources comprise:

...[D]istricts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (a) are

1 associated with events that have made a significant contribution to the broad patterns of  
2 our history; or (b) that are associated with the lives of persons significant in our past; or  
3 (c) that embody the distinctive characteristics of a type, period, or method of construction,  
4 or that possess high artistic values, or that represent a significant distinguishable entity  
5 whose components may lack individual distinction; or (d) that have yielded or may be  
6 likely to yield, information important to history or prehistory.

7 Archaeological site evaluation assesses the potential of each site to meet one or more  
8 of the criteria for NRHP eligibility based upon visual surface and subsurface evidence (if  
9 available) at each site location, information gathered during the literature and record  
10 searches, and the researcher's knowledge of and familiarity with the historic or  
11 prehistoric context associated with each site.

12 The NRHP was established to recognize resources associated with the country's history  
13 and heritage. Guidelines for nomination are based on significance in American history,  
14 architecture, archaeology, engineering, and culture that also possess integrity of  
15 location, design, setting, materials, workmanship, feeling, and association.

#### 16 American Indian Religious Freedom Act

17 The American Indian Religious Freedom Act, Title 42 United States Code, section 1996,  
18 protects Native American religious practices, ethnic heritage sites, and land uses. The  
19 Act states:

20 On and after August 11, 1978, it shall be the policy of the United States to protect and  
21 preserve for American Indians their inherent right of freedom to believe, express, and  
22 exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native  
23 Hawaiians, including but not limited to access to sites, use and possession of sacred  
24 objects, and the freedom to worship through ceremonials and traditional rites.

#### 25 Federal Land Policy and Management Act

26 The State and Federal statutes enacted for the protection of significant paleontological  
27 resources do not include significance criteria, although not all fossils are considered  
28 significant, even by professional paleontologists. Some Federal agencies charged with  
29 management of paleontologic resources on Federal lands under the dictates of the  
30 Federal Land Policy and Management Act, have therefore sought to clarify the  
31 definitions of paleontologic significance in close cooperation with paleontologic  
32 professionals and other interested parties. In the absence of similar guidelines provided  
33 by California State agencies, the Federal guidelines have generally been adopted as

applicable where California laws require protection of significant paleontologic resources.

A set of explicit and relatively objective criteria for assessment of paleontological significance, compatible with the above considerations, has been developed by the U.S. Bureau of Land Management. These criteria lead to a ranking of geographic areas according to the probability of occurrence and the level of importance of fossils:

**Condition 1:** Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.

**Condition 2:** Areas with exposures of geologic units or settings that have a high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The presence of geologic units from which such fossils have been recovered elsewhere may require further assessment of these same units where they are exposed in the area of consideration.

**Condition 3:** Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, aeolian deposits, or the presence of deep soils. Anticipated depth of bedrock will aid in determining if fossiliferous deposits will be potentially uncovered during surface-disturbing activities."

The historically disturbed sediments and peat deposits discussed above meet Condition 3, while the younger, inorganic Delta deposits and older inorganic Delta deposits meet Condition 2.

#### National Environmental Policy Act of 1969 (NEPA) (42 USC 321)

The National Environmental Policy Act directs Federal agencies to "Preserve important historic, cultural, and natural aspects of our national heritage..." (section 101(b) (4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR sections 1500 through 1508.

## 1 State

## 2 California Environmental Quality Act (CEQA)

3 State historic preservation regulations affecting this Project include the statutes and  
4 guidelines contained in the CEQA (Public Resources Code sections 21083.2 and  
5 21084.1 and section 15064.5 of the State CEQA guidelines). The CEQA requires lead  
6 agencies to carefully consider the potential effects of a project on historical resources.  
7 An “historical resource” includes, but is not limited to, any object, building, structure,  
8 site, area, place, record, or manuscript, which is historically or archaeologically  
9 significant (Public Resources Code section 5020.1). Section 15064.5 of the State  
10 CEQA Guidelines specifies criteria for evaluating the importance of cultural resources,  
11 including:

- 12 • The resource is associated with events that have made a contribution to the  
13 broad patterns of California history;
- 14 • The resource is associated with the lives of important persons from our past;
- 15 • The resource embodies the distinctive characteristics of a type, period, region  
16 or method construction, or represents the work of an important individual or  
17 possesses high artistic values; or
- 18 • The resource has yielded, or may be likely to yield, important information in  
19 prehistory or history.

20 Advice on procedures to identify such resources, evaluate their importance and estimate  
21 potential effects is given in several agency publications such as the series produced by the  
22 Governor's Office of Planning and Research (OPR). The technical advice series produced  
23 by OPR strongly recommends that Native American concerns and the concerns of other  
24 interested persons and corporate entities, including but not limited to, museums, historical  
25 commissions, associations and societies, be solicited as part of the process of cultural  
26 resources inventory.

## 27 California Health and Safety Code

28 In addition, California law protects Native American burials, skeletal remains and  
29 associated grave goods regardless of their antiquity and provides for the sensitive  
30 treatment and disposition of those remains.

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human remains are discovered. The Code states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

#### California Register of Historical Resources

The State Historic Preservation Office also maintains the California Register of Historic Resources (CRHR). Properties that are listed on the NRHP are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys.

#### California Public Resources Code

The California Public Resources Code, (Division 5, Parks and Monument, Chapter 1.7 entitled "Archeological, Paleontological, and Historic Sites". Section 5097 to 5097.6) imposes sanctions for "unauthorized excavation, removal, destruction, etc., of ... paleontological ...features on public lands...". Under this portion of the statute, "public lands" include "...lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof".

#### **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address cultural resources, but not specifically paleontological resources. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.



## 1 Additional Guidance

2 Society of Vertebrate Paleontology

Specific recommendations for mitigation of negative impacts on paleontologic resources are not included in either California State or U.S. Federal statutes, or in guidelines for their application. Because fossils representing vertebrate animals (as opposed to fossils of plants or invertebrate animals) are generally recognized as significant resources, the Society of Vertebrate Paleontology provided uniform guidelines for recommended mitigation methods, which generally include:

- 9 • A preliminary survey and surface salvage prior to construction;
- 10 • Monitoring and salvage during construction;
- 11 • Preparation, including screen washing to recover small specimens (if applicable),
- 12 and specimen preparation to a point of stabilizations and identification;
- 13 • Identification, cataloging, curation and storage; and
- 14 • A final report of the finds and their significance after all operations are complete
- 15 (Society of Vertebrate Paleontology 1995).

16 In recent years, these guidelines have been broadly accepted as appropriate minimum  
17 standards and measures.

## 18 Impact Discussion

Information for this section was obtained from the *Cultural Resources Survey for the Line 57 Reliability Project in San Joaquin and Contra Costa Counties, California* prepared by Applied EarthWorks, Inc. (AE) in July 2005 (Appendix F), which includes a geoarchaeological analysis. The report preparers used a multi-step process for gathering the necessary information which is described in the following paragraphs.

24 A records search was performed on February 7, 2005, at the Central California  
25 Information Center of the California Historical Resources Information System (CHRIS)  
26 housed at California State University, Stanislaus for the San Joaquin County portion of  
27 the Project. A records search was also performed on February 4, 2005, at the  
28 Northwest Information Center of the CHRIS at Sonoma State University for the Contra  
29 Costa County portion of the Project. The record searches covered a two mile wide

1 study area encompassing the pipeline corridor and a one mile buffer on each side. The  
2 records searches were conducted to identify locations of previous archaeological  
3 investigations and previously recorded prehistoric and historical sites and features  
4 within the study area.

5 The Native American Heritage Commission was also contacted by AE in February 2005  
6 for a list of current local contacts and to request that their Sacred Lands files be  
7 reviewed in relation to the Project site. Each of the local contacts was then contacted to  
8 request their knowledge of the site.

9 ASI Archaeological and Cultural Resource Management conducted a geoarchaeological  
10 analysis of the Project area for the purposes of locating archaeologically sensitive  
11 areas. These areas are typically associated with particular natural features and soil  
12 types that are not readily identifiable during surface inspection. The analysis included a  
13 review of county soil inventories and of modern and historical aerial photographs  
14 obtained from the United States Geologic Survey (USGS), National Aeronautics and  
15 Space Administration, etc. The analysis identified several environmental variables that  
16 co-occur with almost every recorded prehistoric archaeological site in the Project  
17 vicinity. These variables were correlated into Archaeological Sensitivity Zones (ASZ)  
18 and ranked in descending order of concern depending on the number of co-occurring  
19 variables.

20 An intensive pedestrian survey was conducted by AE archaeologists between February  
21 14<sup>th</sup> and 17<sup>th</sup>, 2005, on May 17, 2005, and between June 22<sup>nd</sup> and 24<sup>th</sup> 2005. The  
22 survey covered the 200-foot-wide mainline corridor, a 300-foot-wide area around HDDs  
23 and HDD pull backs, the unimproved access roads, and all of the temporary use areas.  
24 The majority of the survey was accomplished by a pair of archaeologists walking  
25 parallel transects spaced 32-49 feet (10-15 meters) apart. Areas, which are highly  
26 sensitive for cultural resources, ASZs, (as determined by the geoarchaeological  
27 analysis) were covered by parallel transects space 3-32 feet (1-10 meters) apart  
28 depending on the level of sensitivity. Special attention was paid to the two ASZ 1 areas,  
29 which were surveyed in parallel transects 3-6 feet (1-2 meters apart). One ASZ was  
30 identified on the Lower Jones Tract and the other on the Palm Tract. Existing  
31 commercial properties, paved roads, levee roads and improved roads (graded and  
32 graveled) were not surveyed. No archaeological sites, historic building, structures, or  
33 other cultural resources were encountered. The Project area was also photographed.

1 Finally, previously recorded archaeological sites within or immediately adjacent to the  
2 Project area were confirmed by field checking against existing records.

3 Project realignments, design alterations, and low surface visibility due to crop coverage  
4 precluded the surface examination of portions of the Project area, including sections of  
5 an HDD temporary use area on Bacon Island, the tie-in point and temporary use area  
6 on Palm Tract and the temporary use area on McDonald Island. These areas were  
7 surveyed in December 2005 (Applied Earthworks, Inc. 2005). One objective of this  
8 survey was to delineate the site boundaries of CA-SJO-189.

9 PG&E has a flyer titled "Cultural Resources: A Guide to Identification and Protection"  
10 that is given to everyone working on a PG&E project (PG&E 2004c). The flyer  
11 discusses corporate environmental policy, defines cultural resources and gives  
12 instructions as to what to do if they are found at any work site, and contact information  
13 for specialists in the event that cultural resources or human remains are discovered on  
14 a site.

## 15 **Impact Discussion**

16 a. The Mokelumne Aqueduct (CA-SJO-286H) is considered eligible for the NRHP.  
17 A segment of the Atchison, Topeka and Santa Fe Railway (P-39-000112)  
18 crosses the Project area and has not previously been evaluated. Lower Jones  
19 Road, a proposed Project access road, crosses the aqueduct and the railroad  
20 near the town of Holt.

21 A historic fishing dock and associated historic debris (CA-SJO-283H) is located  
22 within a construction yard that would be used during the proposed Project as a  
23 materials staging area. The site has been determined ineligible for the NRHP.

24 CA-SJO-219H is one of a series of labor camps that was once located in the  
25 area. The site is a contributing element to the NRHP-eligible Bacon Island Rural  
26 Historic District, which encompasses all of Bacon Island and includes 12 labor  
27 camps associated with George Shima, an important Japanese-American potato  
28 farmer in the early twentieth century. The mainline corridor does not pass within  
29 300 feet of any historic property; however, a proposed access road is within 30  
30 feet of CA-SJO-219H.

31 It has been determined that the use of the Lower Jones Road would not affect  
32 the Mokelumne Aqueduct or the Atchison, Topeka and Santa Fe Railway. The

historic fishing dock and associated historic debris has been determined ineligible for the NRHP and would, therefore, not be considered a historical resource as defined by the CEQA. It has also been determined that the proposed Project activity would not adversely affect the significant qualities or integrity of any of the contributing elements of the Bacon Island Rural Historic District. The proposed Project would not cause any adverse impacts to any eligible historic resources. Therefore, the impact is *less than significant*.

b. **Impact CUL-b-1: Construction activities could adversely affect the significance of an archaeological resource.**

Nineteen archaeological resources have been documented within one mile of the Project area. Five of the 19 of these documented resources (CA-SJO-189, -219H, -283H, -286H, and P-39-000112) and portions of one historic district are either within or adjacent to the Project site. CA-SJO-219H, -283H, -286H, P-39-000112 and the historic district are discussed above in item 2.3.5a. Large scale reclamation projects of the past 150 years and subsequent agricultural practices have made it difficult to ascertain the presence of prehistoric cultural material based solely on surface indicators.

A large burial site on McDonald Island (CA-SJO-189) was uncovered during leveling of a large sand mound and emergency excavations were conducted at the site by California State College, Stanislaus in 1981. The site contained intact burials with large numbers of associated funerary goods, including pestles, manos, projectile points, bifaces, and beads. No analysis or report has been prepared for these materials. The mound itself was clearly evident during December 2005 surveys and contained cultural material that was not removed in 1981 when the burials were excavated and the mound graded. This site is located adjacent to the temporary use area, but outside of the Project boundaries.

As stated above, the two ASZs identified by geoarchaeological analysis were more closely scrutinized during the pedestrian survey. The survey of the "Lower Jones Tract did not locate any surface evidence of archaeological artifacts, indicating that the sand mound probably does not contain cultural material" (Applied Earthworks, Inc. 2005). No cultural material was observed during the pedestrian survey of the Palm Tract ASZ and "based on soil composition and the

topography of the surrounding area, it does not appear that the purported sand mound extends into the temporary use area” (Applied Earthworks, Inc. 2006).

Due to the fact that no report is available detailing the excavation of CA-SJO-189, it is not possible to determine if all of the burials were removed during the 1981 excavation. While no subsurface disturbance would occur in this area, disturbance of this resource would be a *potentially significant impact*, which would be reduced to ***less than significant*** with mitigation.

#### **Mitigation Measure CUL-b-1**

The following mitigation measure would protect any resources that may remain at the CA-SJO-189 site.

Prior to Project construction the following shall occur:

- Temporary exclusionary fencing, indicating a “Sensitive Environment Zone” shall be constructed along the south eastern edge of the McDonald Island temporary use area adjacent to CA-SJO-189.
- A qualified archaeologist familiar with CA-SJO-189 and the soil types surrounding the site shall be retained to assist with the fencing and ensure it is outside of the boundaries of CA-SJO-189.

#### **c. Impact CUL-c-1: Construction could adversely impact paleontological resources.**

Information on the probability of occurrence and significance of fossils within the Line 57 Project area has been assembled from three primary sources: (1) published geologic and paleontologic literature, including geologic maps, (2) museum records of known published and unpublished vertebrate fossil localities in the region, and (3) a Project-specific geotechnical report, prepared by Kleinfelder, Inc. (Appendix I).

According to the paleontological report, significant paleontological resources (Pleistocene vertebrate fossils) probably do not exist in the peat and peaty mud deposits in the upper 14 to 17 feet of most of the Project area (except on portions of Bacon and McDonald Islands where the peat deposits are thinner), but

probably do exist throughout the Project area within the sediments below the peat (Hanson 2005).

Portions of Bacon and McDonald Islands have inorganic deposits (lacking peat) at depths that could be within the expected trench depth and could support Pleistocene vertebrate fossils that could be adversely impacted by trenching activities. Further, HDD techniques required to cross Empire Cut, Latham Slough, Middle, and Old Rivers and the main drainage canals on McDonald and Bacon Islands would occur through Pleistocene Delta deposits that likely support vertebrate fossils. Fossils along the alignment could be disturbed or destroyed by Project construction resulting in a *significant impact*. However, because the presence and location of fossils along the alignment is unknown, direct avoidance is not possible and determining the magnitude of the impact is impossible.

The following mitigation measure would allow for the collection and preservation of any fossils encountered during construction. These measures are consistent with those recommended by the Society of Vertebrate Paleontology; however preconstruction surveys are not included due to the presence of peat soils that would likely not support fossils and due to the highly disturbed nature of the surface soils from agricultural uses. Implementation of this mitigation measure would ensure that Project impacts are reduced to ***less than significant***.

#### **Mitigation Measure CUL-c-1**

Prior to Project construction, the Applicant shall retain a qualified paleontologist to design and implement a monitoring and mitigation program for the portions of the Project likely to impact paleontological resources (horizontal directional drilling techniques, and trenching on McDonald and Bacon Islands). The program shall include construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage coordination for any specimen and data recovered; and preconstruction coordination and reporting.

#### **d. Impact CUL-d-1: Construction could disturb human remains.**

One large prehistoric cemetery is located adjacent to the temporary use area (CA-SJO-189) with an additional four burial sites within 1.5 miles of the Project area. These sites are all outside of the Project area. Due to these burial sites,

1 including the unknown excavation status of CA-SJO-189, and the fact that Native  
2 Americans were present in the Delta region at least 4,000 years ago, there is a  
3 possibility that burial sites containing human remains could be disturbed in the  
4 Project area. CA-SJO-189 and any previously undiscovered burial sites could be  
5 disturbed or destroyed by the Project construction resulting in a *significant*  
6 *impact*. Mitigation Measure CUL-b-1 listed above in combination with Mitigation  
7 Measure CUL-d-1 listed below would reduce these impacts to ***less than***  
8 ***significant***.

9 The following mitigation measure in combination with Mitigation Measure  
10 CUL-b-1 would reduce the impact to less than significant by providing monitoring  
11 of the Project site with regards to human remains and providing a process by  
12 which human remains are to be dealt with if discovered.

13 **Mitigation Measure CUL-d-1**

14 If human remains are discovered, there shall be no further excavation or  
15 disturbance of the discovery site or within 50 feet until the Applicant has complied  
16 with the provisions of the State CEQA Guidelines section 15064.5(e). In general,  
17 these provisions require that the County Coroner shall be notified immediately. If  
18 the remains are found to be Native American, the County Coroner shall notify the  
19 Native American Heritage Commission within 24 hours. The most likely  
20 descendant of the deceased Native American shall be notified by the County and  
21 given the chance to make recommendations for the remains. If the County is  
22 unable to identify the most likely descendent, or if no recommendations are made  
23 within 24 hours, remains may be re-interred with appropriate dignity elsewhere  
24 on the property in a location not subject to further subsurface disturbance. If  
25 recommendations are made and not accepted, the Native American Heritage  
26 Commission will mediate the problem.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.6 GEOLOGY AND SOILS.</b>				
<i>Would the project:</i>				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist - Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion, or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
d. Be located on expansive soils, as defined in Table 18-1-13 of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1 Information for this section was obtained in part from the *Preliminary Geotechnical*  
2 *Services Report, Pacific Gas and Electric Pipeline 57C Revised Route, San Joaquin*  
3 *County, California*, prepared by Kleinfelder, Inc. (Appendix I).

#### 4 **Environmental Setting**

#### 5 **Regional Geology**

6 The Project area is located along the western edge of the Great Valley province, a  
7 northwest-trending asymmetrical structural basin bounded by the Sierra Nevada  
8 province to the east and south, the Klamath Mountains to the north, the Cascade Range  
9 province to the northeast, and the Coast Ranges province to the west. The Great  
10 Valley (comprised of the Sacramento Valley and the San Joaquin Valley) is a nearly flat  
11 alluvial plain extending for about 450 miles from the Klamath Mountains south to the  
12 Tehachapi Mountains.

13 The Project site is located in the Delta near the confluence of the Sacramento and San  
14 Joaquin Rivers. The Delta is part of the Central Valley geomorphic province, a  
15 northwest trending structural basin separating Sierra Nevada granitic rock from the  
16 marine and non-marine sedimentary rock of the California Coastal Ranges. Sediment  
17 deposits within the area accumulated in a marine environment approximately 175  
18 million years ago to 25 million years ago.

1 Since late in the Quaternary, the Delta has experienced cycles of deposition, non-  
2 deposition, and erosion, resulting in the accumulation of a few hundred feet of poorly  
3 consolidated to unconsolidated overlying sediments. During a rise in sea levels about  
4 11,000 years ago, Delta peat and organic soils began to form. Rising sea levels  
5 created tule marshes, which in combination with other vegetation, formed peat from  
6 repeated burial. Cycles of erosion and deposition also resulted in the formation of a  
7 complex pattern of islands and interconnected sloughs, as the Sacramento,  
8 Mokelumne, and San Joaquin Rivers entered from the north, northeast, and southeast  
9 and finally merged in the Delta. River and slough channels were repeatedly incised and  
10 backfilled with sediments from fluctuations in river flows. These processes were further  
11 complicated by concurrent subsidence and tectonic changes in the land surface.

12 Hydraulic mining during the gold rush of the mid 1800s produced debris, resulting in  
13 hundreds of thousands of tons of silt washing into the Delta, disrupting the natural  
14 depositional history of the region. As a result, stream channels filled, causing flooding  
15 and raising natural levees along the Delta streams and sloughs.

## 16 **Local Geology**

17 The Project site consists of relatively flat, level topography with slopes of 0 to 2 percent.  
18 Existing levees extend above the level agricultural fields, preventing Delta waterways  
19 from flooding the adjacent lands.

20 Geologic mapping within the Project area reveals the site is underlain by younger  
21 (Holocene) peats at the surface and muds from tidal wetland environments. These  
22 peats and muds form soft, generally carbonaceous deposits with a characteristically low  
23 bulk density. At the levees, the peats underlie sand, silt, and clay historically deposited  
24 by clamshell dredges or by the flow of water through man-made levees (Kleinfelder, Inc.  
25 2005).

## 26 **Regional Faulting**

27 Palm Tract lies within the eastern edge of Seismic Zone 4 and the remainder of the  
28 Project area is located in Zone 3, per the 2000 California Building Code (Kleinfelder,  
29 Inc. 2005). The Project site is not located within an Alquist-Priolo Earthquake Fault  
30 Zone and no active fault zones or shear zones are known to cross the proposed  
31 pipeline route (Kleinfelder, Inc. 2005). Although the Project site is not located within an  
32 Alquist- Priolo Fault zone or any known shear zones, the potential for strong seismic-

1 related ground shaking exists from nearby active faults in the San Francisco Bay area  
2 (Kleinfelder, Inc. 2005). In order for a fault to be considered “active,” it must have  
3 experienced seismic activity since roughly 1800 or exhibit surface rupture evidence  
4 during Holocene time (Kleinfelder, Inc. 2005).

5 The Greenville-Marsh Creek fault is located approximately 15 miles (25 km) to the  
6 southwest of the Project site. Although the exact location of the Great Valley fault  
7 system is not known, it is described as running from west of Byron to west of Oakley,  
8 within approximately 4 miles (6 km) of the Project site. Thrust faulting associated with  
9 the Great Valley fault system in the Delta appears to be a complex interaction related to  
10 and associated with strike-slip fault motion from the eastern bay Area strike-slip faults  
11 (Kleinfelder, Inc. 2005). Other active faults that may be associated with the Great  
12 Valley fault system and are located within the region include: Rio Vista, Antioch,  
13 Montezuma Hills, San Joaquin and Midland faults (Kleinfelder, Inc. 2005). Table 2-3  
14 lists the active and potentially active faults within 62 miles (100 km) of the Project site  
15 and their parameters.

16 The Project vicinity is generally characterized by moderate seismic activity (Kleinfelder,  
17 Inc. 2005). Historical information indicates that the proposed pipeline route could be  
18 subject to strong seismic ground shaking during the design life of the Project. Using  
19 data from the California Seismic Hazards Map and the Mualchin and Jones attenuation  
20 curve, modified by 20 percent based on fault type (thrust), the maximum considered  
21 earthquake magnitude 6.7 has been used as the governing design event (Kleinfelder,  
22 Inc. 2005).

## 23 **Soils**

24 The proposed pipeline route intersects nine soil map units: Itano silty clay loam, Rindge  
25 mucky silty loam, Rindge muck, Ryde Silt Loam, Ryde-Peltier complex, Kingile muck,  
26 Shinkee muck, Kingile-Ryde complex, and Fluvaquents (U.S Department of Agriculture  
27 1977 and 1992).

28 Field explorations consisted of drilling and sampling seven test borings, extending to a  
29 depth of 101 ½ feet below the existing ground surface along the proposed pipeline  
30 alignment. Very soft to medium stiff peat, and organic silt and clay soils were  
31 encountered in all test borings, except one, in depths ranging from 14 to 18 feet below  
32 existing grade. Clean and silty sand was found in all borings below the organic layer,  
33 extending from 36 up to 90 feet in depth. Sand layers varied from loose to very dense,

**Table 2-3: Active and Potentially Active Faults Within 100 km of the Project Site**

<b>Fault Name</b>	<b>Fault Length in miles (km)</b>	<b>Closest Distance to Alignment in miles (km)</b>	<b>Magnitude of Maximum Earthquake*</b>
Great Valley – Segment 6	28 (45)	8 (13)	6.7
Greenville – Marsh Creek	35 (56)	16 (25)	6.9
Great Valley – Segment 7	28 (45)	16 (26)	6.6
Great Valley – Segment 5	17 (28)	17 (27)	6.7
Concord – Green Valley	16 (26)	23 (37)	6.9
Calaveras (northern)	32 (52)	24 (38)	6.8
Hayward	50 (80)	32 (52)	7.1
Great Valley – Segment 4	26 (42)	32 (52)	6.6
Calaveras (southern)	62 (100)	34 (55)	6.2
West Napa	19 (30)	40 (65)	6.8
Monte Vista – Shannon	25 (41)	42 (68)	6.8
Great Valley – Segment 8	25 (41)	42 (68)	6.7
Rodgers Creek	37 (60)	43 (70)	7.0
Ortogonalita	41 (66)	50 (80)	6.9
San Andreas (1906 Event)	292 (470)	50 (80)	7.9
Huntington Creek – Berryessa	37 (60)	52 (83)	6.9
San Gregorio	80 (129)	58 (93)	7.3
Sargent	33 (53)	59 (95)	6.8
Great Valley – Segment 3	34 (55)	60 (96)	6.8

**Notes:**

Parameters based on data presented by real et. Al. (1978), Topozada et al. (1984), Wesneousky (1986), Wong et al. (1988), Working Group of California Earthquake probabilities (1990), Wagner (1990), Schwartz (1994), Jennings (1994), Mualchin (1995), Franke et al. (1996), and Petersen et al. (1996).

\*Moment magnitude

Source and Data: Preliminary Geotechnical Services Report for the Pacific Gas and Electric Pipeline 57C Revised Route prepared by Kleinfelder, Inc., June 2005. Distances were converted from metric to English units by EIP Associates.

- 1 with more dense deposits encountered below the approximated depth of 20- to 25-feet.
- 2 Below the sand, soils primarily consisted of interbedded layers of sandy and clayey silt,
- 3 silty and sandy clay, and clean and silty sand (Kleinfelder, Inc. 2005).
- 4 Organic Soils
- 5 Organic soils, commonly called peat or muck, developed from plant residues and have
- 6 been preserved by a high water table. Within the proposed pipeline route, the upper

1 approximate 25 feet of soil generally consists of younger poorly-consolidated sediments  
2 containing interbedded stream and overbank deposits. Stream deposits consist of  
3 loose to medium-dense, clean and silty sand, while overbank deposits contain soft peat  
4 and organic silts and clays (Kleinfelder, Inc. 2005).

5 Organic soils characteristics relevant to pipeline construction include: compaction,  
6 subsidence, and burning, or peat fires. Exposure to aerobic conditions from farm  
7 cultivating and dewatering facilitates rapid microbial oxidization of the carbon in peat  
8 soil. This process has contributed to subsidence of the islands of the Delta (USGS  
9 2005b). Organic soils are also susceptible to ignition, resulting in peat fires that are  
10 smoke intensive and difficult to extinguish. Analysis of the potential for peat fires can be  
11 found under Section 2.3.7, Hazards and Hazardous Materials.

## 12 **Soil Instability**

13 Based on the soils in the proposed pipeline construction, HDD drilling activities will likely  
14 be subject to some adverse drilling conditions, although drilling conditions should be  
15 “Generally Suitable” according to ASTM F 1962-99, Table 1. Soft upper layers of peat  
16 and organic silt and clay soils may create difficulty steering and the drill head may have  
17 a tendency to sink on the entry side and resist turning up on the exit side. Poorly  
18 graded sands and fractured peat deposits may result in partial or complete loss of  
19 drilling fluid returns. Soft (weak) silt, lean clay, and peat and poorly-graded (flowing)  
20 sands may result in a decrease of hole stability. Instability may also occur below  
21 25 feet, within more-consolidated sediments.

22 Levee failure resulting from hydraulic fracturing or uplift pressure from beneath the  
23 levee is an additional consideration related to soil instability associated with pipeline  
24 construction, particularly with the use of HDD drilling techniques. Hydraulic fracture is  
25 of concern when using high pressure drilling fluid in areas of weak, relatively-shallow  
26 soils (Kleinfelder, Inc. 2005). Geotechnical engineering personnel would be on-site  
27 during HDD activities to make physical observations of the levee and the toe of the  
28 levee in order to evaluate if movement is occurring (Kleinfelder, Inc. 2005).

## 29 Liquefaction

30 Liquefaction is a phenomenon in which saturated, cohesionless soils temporarily lose  
31 their strength and liquefy when subjected to dynamic forces such as intense and  
32 prolonged ground shaking. Liquefaction typically occurs when the water table is less

than 50 feet below ground surface and the soils are predominantly unconsolidated. The potential for liquefaction increases as the groundwater approaches the surface. Based on the depth to water in the vicinity of the pipeline (3 to 11 feet below ground surface), and moderate seismicity in the region surrounding the pipeline, the liquefaction potential is high along the pipeline route (Contra Costa County 1996 and San Joaquin County 1992). Peat soil is generally not subject to liquefaction, but could move if underlying soils were to liquefy.

The geotechnical report indicated that the potential for an earthquake along the Great Valley, Greenville, Concord, Calaveras, or Hayward faults with the intensity and duration characteristics capable of promoting liquefaction is a possibility during the design life of the project. Based on subsurface conditions, the Preliminary Geotechnical Report determined that perhaps 5 to 10 feet of loose to medium-dense "clean" sands and silty sands are susceptible to liquefaction. Of particular concern in the case of a strong earthquake of long duration is the potential for instability from lateral spreading beneath adjacent levees. Since the proposed HDDs are located 90 to 100 feet below the top of levees, this risk is considered minimal (Kleinfelder, Inc. 2005). Since the Preliminary Geotechnical Report was published, the pipeline engineering has actually lowered the pipeline depth a minimum of 75 feet below the toe of the levees.

### Seepage

Seepage or piping concerns could occur if the HDD ever left an open conduit beneath adjacent water. Adjacent farmlands are lower in elevation than the water surface at HDD locations. This elevation difference would be a "driving force" for potential seepage of water to the entry/exit points during drilling. Adjacent groundwater water elevation (approximately 20 to 25 feet below the water level in the slough) indicates that the head loss through native soils can adequately prevent surgical seepage or piping. Taking into consideration the loss of head through native soils, the additional unit weight of drilling fluids is sufficient to prevent water from migrating up the drill path and surgical seepage or piping has a very low probability of occurrence. Additional preventative measures such as containment cells would not be necessary (Kleinfelder, Inc. 2005).

### Erosion

Erodibility is the measure of the susceptibility of soil particles to detachment and transport by rainfall, runoff and wind. Erosion hazards are generally accelerated with soil disturbance and exposure to sun, wind and water. Erosion hazard ratings for

1 Project soils from the Natural Resources Conservation Service Soil Surveys for San  
2 Joaquin and Contra Costa Counties range from slight to severe for wind-related erosion  
3 (U.S. Department of Agriculture 1977 and 1992).

#### 4 Subsidence

5 The Delta islands have been subsiding since they were formed and are now 10 to 25  
6 feet below sea level. The main reason for the subsidence is the oxidation of organic  
7 carbon, but other causes include wind erosion, tectonic movement, compaction,  
8 consolidation, burning, and to a lesser extent, anaerobic decomposition of the peat.  
9 Subsidence rates on Lower Jones Tract and Bacon and Mildred Islands were last  
10 measured in 1981 and found to range from 1.2 to 1.6 inches a year. As the islands  
11 continue to subside, the irrigation ditches on the island will need to be deeper to prevent  
12 flooding and the levees will need to be raised to prevent overtopping.

#### 13 Regulatory Setting

##### 14 **Federal**

##### 15 U.S. Department of Transportation (DOT)

16 The DOT establishes the “Transportation of Natural Gas by Pipeline: Minimum Federal  
17 Safety Standards” as required in 49 CFR 192.

##### 18 **State**

19 The major State regulations protecting the public from geo-seismic hazards, other than  
20 surface faulting, are contained in California Code of Regulations, Title 24, Part 2, the  
21 *California Building Code* and California Public Resources Code, Division 2, Chapter 7.8,  
22 the *Seismic Hazards Mapping Act*. The California Building Code (CBC) is based on the  
23 Uniform Building Code (UBC), which is used widely throughout United States (adopted  
24 on a state-by-state or district-by-district basis) and has been modified for California  
25 conditions with numerous more detailed and/or more stringent regulations.

26 The State Earthquake Protection Law (California Health and Safety Code sections  
27 19100 *et seq.*) requires that structures be designed to resist stresses produced by  
28 lateral forces caused by wind and earthquakes. Specific minimum seismic safety and  
29 structural design requirements are set forth in Chapter 16 of the CBC. The CBC  
30 requires a site-specific geotechnical study to address seismic issues and identifies

seismic factors that must be considered in structural design. Because the proposed Project is not located within an Alquist-Priolo Earthquake Fault Zone, as noted above, no associated provisions would be required for Project development related to fault rupture. However, as delineated in the CBC, the Contra Costa County portion of the proposed Project is located in Seismic Zone 4, and the San Joaquin County portion is located in Seismic Zone 3. The proposed Project would be required to adhere to design criteria for those zones.

Chapter 33 of the CBC regulates grading activities, including drainage and erosion control, and construction on expansive soils. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in Cal-OSHA regulations (Title 8 of the California Code of Regulations (CCR)) and in section A33 of the CBC.

In addition to all other applicable Federal and State codes and regulations, and industry standards for pipeline design, the CSLC requires that the pipeline design also meet the requirements of current seismological engineering standards such as the "Guidelines for the Design of Buried Steel Pipe" by American Lifeline Alliance and the "Guidelines for the Seismic Design of Oil and Gas Pipeline Systems" by American Society of Civil Engineers for seismic resistant design of the pipeline. The CSLC also requires that all engineered structures, including pipeline alignment drawings, profile drawings, buildings and other structures, and other appurtenances and associated facilities, to be designed, signed, and stamped by California registered professionals certified to perform such activities in their jurisdiction.

As required by 49 CFR 192, the Applicant is required to prepare an "operations, maintenance and emergency" manual. The Applicant has prepared said manuals for their entire pipeline system and they are on file with the California Public Utilities commission.

## **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address geology and soils. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.



## **Impact Discussion**

### **a (i, ii). Impact GEO-a (i, ii)-1: The proposed pipeline could be damaged by strong seismic ground shaking.**

The Project site is not located within an Alquist-Priolo fault zone (Kleinfelder, Inc. 2005). However, the Project area lies within an area traditionally characterized by moderate seismic activity due to the complex reactions of regional thrust and strike-slip faults of the Great Valley fault system. Damage to gas pipeline systems from earthquakes generally results from older pipelines that have other weaknesses (corrosion, outdated construction methods or less sturdy materials) (California Seismic Safety Commission 2002). Pipeline industry experience in California has shown that welded steel pipelines rarely fail as a result of earthquakes (Williams 2005). However, based on historical records, the proposed Project could experience strong seismic ground shaking at least once during its design life (50 years) (Kleinfelder 2005). Damage to the pipeline from strong seismic ground shaking would result in a potentially significant impact. However, this impact could be reduced to ***less than significant*** with mitigation.

### **Mitigation Measure GEO-a (i, ii)-1**

In accordance with the recommendation in the Preliminary Geotechnical Services Report *Pacific Gas & Electric Pipeline 57C Revised Route, San Joaquin County, California* (Kleinfelder, Inc. 2005), the Applicant shall design the pipeline to withstand a maximum considered earthquake of 6.7. The Applicant shall prepare a seismic analysis subject to review and approval by California State Lands Commission 60 days prior to the start of construction. The analysis shall substantiate how the pipeline has been modified to withstand a 6.7 seismic event.

### **Mitigation Measure GEO-a (i, ii)-2**

In order to ensure the safety of excavations, OSHA-approved shoring shall be used at all times when shoring is required. Within construction activities on Palm Tract (Seismic Zone 4) potential impacts of ground shaking shall be assessed to determine the adequacy of OSHA-approved shoring. Any necessary enhancements to OSHA-approved shoring on Palm Tract shall be incorporated into the final trench design.

**Mitigation Measure GEO-a (i, ii)-3**

The Applicant shall design the proposed Project for seismic resistance, meeting the requirements of current seismological engineering standards such as the “Guidelines for the Design of Buried Steel Pipe” by American Lifeline Alliance and the “Guidelines for the Seismic Design of Oil and Gas Pipeline Systems” by American Society of Civil Engineers. All engineered structures, including pipeline alignment drawings, profile drawings, buildings and other structures, and other appurtenances and associated facilities, shall be designed, signed, and stamped by California registered professionals certified to perform such activities in their jurisdiction.

a (iii). Depth to groundwater in the Project area ranges between 3 to 11 feet below ground surface. San Joaquin and Contra Costa Counties consider the reclaimed Delta lowlands, particularly in areas where the water table is less than 50 feet below the surface, as highly susceptible to liquefaction (Contra Costa County 1996 and San Joaquin County 1992). Liquefaction would be of concern along the pipeline route in areas of sandy soils. Further, in the case of a strong earthquake of long duration, lateral spreading beneath and adjacent to the levees could cause damage to the levees, which could result in damage to the pipeline. This would be of particular concern in the case of a strong earthquake of long duration that would create a potential for flow instability of lateral spreading beneath the levees. However, the pipeline would be below the liquefiable soils and the risk is considered minimal (Kleinfelder, Inc. 2005). Further, the pipeline would be constructed in compliance with engineering and construction standards mandated by Federal, State and local agencies, i.e., CBC for Seismic Zones 3 and 4, would ensure that impacts from liquefaction would be **less than significant**.

a (iv). Hazards related to slope instability and landslides in San Joaquin County are generally associated with foothill areas and mountain terrain surrounding the San Joaquin Valley as well as steep river banks and Delta levees (San Joaquin County 1992). Excavation and trenching for the pipeline would occur across relatively flat, agricultural lands in soils with slopes between 0 and 2 percent (U.S. Department of Agriculture 1992) and HDDs would start and end a minimum of 2,100 feet and 2,300 feet, respectively from the levees. Therefore, there would be **no impact** on proposed Project from landslides.

b. Pipeline construction activities would include clearing, grading, trenching and excavation work resulting in soil disturbance and would have the potential to result in the loss of topsoil and erosion. The Applicant is proposing a 150-foot-wide temporary use area and a 10- to 20-foot-wide trench. Where necessary, the construction work area would be cleared and graded to provide a relatively level surface for trench-excavating equipment and a sufficiently wide workspace for the passage of heavy construction equipment. These clearing and grading activities would likely be minimal due to the fact that the proposed pipeline alignment crosses relatively flat agricultural lands. Most of the pipeline route is underlain by organic soils, which are characterized by properties conducive to wind erosion potentials ranging from moderate to severe, tending to increase as the soil dries out (U.S. Department of Agriculture 1992).

Pipeline construction activities would use erosion-control techniques following best management practices outlined in PG&E's *Water Quality Construction, Best Management Practices Manual* (2004b) and would be coordinated with the appropriate Federal, State, and local agencies. As discussed in Section 1.6.4, Project Description, prior to trenching and excavations for HDD, the peat topsoil would be segregated in accordance with field conditions and landowner requirements and deposited within an approximately 20-foot-wide spoil storage area. To minimize erosion, the Applicant would implement both short- and long-term erosion control measures. Temporary erosion controls would be installed immediately following initial soil disturbance as necessary to prevent erosion and contain excavated material within the approved temporary use areas. Soil conditions would be monitored and erosion control measures would be maintained throughout construction until construction is complete, and the site restored in accordance with pre-arranged landowner requirements.

Further, as discussed in Section 2.3.7 Hydrology and Water Quality, project construction would be required to implement, monitor, and maintain all BMPs pursuant to Federal and State water quality regulations. With implementation of the Applicant's standard BMPs and compliance with Federal and State regulations, impacts would be considered ***less than significant***.

c. **Impact GEO-c-1: The Project would be located on an unstable soil unit, disruption of which could cause levee failure.**

The Project area lies within reclaimed areas which are known to be susceptible to amplified lateral and vertical ground movement (Contra Costa County 1996). The Preliminary Geotechnical report prepared by Kleinfelder, Inc. (Appendix I), states that adverse drilling conditions should be anticipated in conjunction with the presence of poorly-consolidated sediments in the Project area. These conditions include: difficulty steering the HDD drill head within peat, organic silt and clay soils, drilling fluid loss in poorly-graded sand and fractured peat deposits, and hole instability.

#### Drilling Fluid Return

Inadvertent return of drilling fluid to ground surface is referred to as “frac-out” and can be caused by several factors including migration of drilling fluids through subsurface fractures or hydraulic fracturing. It is indicated by a decrease of drilling fluid return in the return pit or tank, a drop in drilling fluid pressure, or a complete loss of drilling fluid returns.

Subsurface fractures may be related to the types of subsurface materials or may be the indirect result of hydraulic fracturing. Fractures in rock or interstitial pores in coarse soil materials, such as gravels and cobbles, provide pathways for fluid migration to the ground surface if fractures are continuous (Kleinfelder, Inc. 2005). Project site conditions are not characterized by underlying bedrock close to the surface or coarse soil materials (Kleinfelder, Inc. 2005). Hydraulic fracturing results from excess drilling fluid pressure, which results in plastic deformation of the soil surrounding the drill shaft and is most common near the shaft exit point (Kleinfelder, Inc. 2005). Drilling fluid can be collected with the use of an exit pit and a vacuum truck under these circumstances.

HDD entrance and exit points would be located at least 2,100 feet and 2,300 feet, respectively from the levee and the bore beneath the levee would maintain a depth of at least 75 feet below the levee and 60 feet below the bottom of the waterway in order to reduce the potential for hydraulic fracture from drilling fluid. Further, 100 feet of steel casing would be temporarily installed at the bore entry and exit points to reduce this potential. Regardless, the potential exists for levee instability and possible failure resulting from Project construction activities. Soil materials present within the proposed pipeline route may have the potential for adverse HDD conditions and may have the potential to result in or exaggerate

unstable soils conditions including the potential for levee instability and failure (Kleinfelder, Inc. 2005), therefore; impacts are considered *potentially significant*. Adverse drilling conditions related to Project area soils may be mitigated to a ***less-than-significant level*** by implementation of the following mitigation measures.

#### **Mitigation Measure GEO-c-1**

Project design shall incorporate all recommendations for HDD activities as recommended in the *Preliminary Geotechnical Services Report Pacific Gas & Electric Pipeline 57C Revised Route, San Joaquin County, California*, dated June 2005, prepared by Kleinfelder, Inc, as outlined below.

##### Mitigation of Adverse Drilling Conditions:

- Surface casing shall be installed at the bore entry side to control the drill path and reduce loss of circulation in the upper soils.
- The HDD drilling contractor shall prepare a drilling program specifically designed for the site soil conditions. This program shall include any additives the subcontractor may need to employ, including additives to increase gel and filter cake strength, inhibit swelling, and reduce stickiness. Possible loss of circulation materials and grouting materials shall also be included in the plan.
- The entry point shall consist of a steel pipe driven at approximately a 10 to 15 degree angle to a competent soil strata or to at least a depth of 25 feet (equates to a length of approximately 100 feet).

##### Recommended Drilling Depth:

- The entrance and exit points of the HDD shall be stationed at least 400 feet from the toe of the levee.
- The depth of the bore beneath the toe of the levee and the bottom of the waterway shall be at least 60 feet.

- A soil buttress will not be needed at either the entrance or exit point, assuming that the HDD will occur during the summer or fall months when the adjacent river elevation is at its low point.

#### Inspection and Monitoring:

- Geotechnical engineering personnel shall be on site during the HDD activities to make physical observations of the levee and the toe of the levee in order to evaluate if any movement is occurring.
- The geotechnical engineering personnel shall have the authority to stop the boring operations if it appears as though damage is occurring to the levee.
- A pressure while drilling tool shall be utilized during the HDD.
- The drilling contractor shall develop a Drilling Fluid Program as part of the HDD Bore Plan, which shall take into account anticipated soil conditions, fluid selection, drill bit and reamer selection, and volume calculations.
- An Emergency Response Plan, shall be provided that would include provisions for having heavy equipment and material available, such as front-end loaders, soil and riprap stockpiles, geotextile fabric, etc., that can be used to buttress the levee in case movement is observed.

#### Drilling Fluid Selection:

- A Drilling Fluid Program Base Fluid shall be designed for site-specific soil conditions. The base fluid may consist of either a bentonite or polymer base and water with additives to achieve specific fluid properties; however, additives that are considered toxic to wildlife will not be allowed.
- In reactive soils the use of partially hydrolyzed polyacrylamide polymers to inhibit swelling and wetting agents to reduce stickiness may prove beneficial. Additives may be needed to treat make-up water containing excess amounts of calcium or chlorine. Salt (chloride) is detrimental to base fluid performance and shall not be present in make-up water.

- The drilling contractor shall submit a base fluid design with a list of additives, loss of circulation materials, and grouting materials that may be used on the Project and material safety data sheets for approval at least 60 days prior to mobilization.
- The drilling fluid program, including the base fluid design, manufacturer's specifications and material safety data sheets should be submitted to the California State Lands Commission, the Reclamation Board, the Central Valley Regional Water Quality Control Board, and Department of Fish and Game, at least 60 days prior to mobilizing equipment to the site.
- For preliminary planning purposes, a bentonite drilling fluid composed of Bore Gel (or equivalent) mixed at an approximate proportion of five 50-pound bags per 400 gallons of clean water is recommended as a consideration. The procedures described in ASTM C-939 (flow cone method) are recommended to be utilized to monitor drilling fluid consistency.

Drill Bit and Reamer Selection:

- Drill bits and reamers shall be based on anticipated subsurface conditions and past experience.
- The use of mud motors shall be considered in cemented soil with Standard Penetration Test blow counts exceeding 60 blows per foot.

Drill Pad Support Line:

- Some ground improvement may be needed to provide support for the HDD drilling equipment. This may include a geotextile placed over compacted soil and covered with approximately 12 inches of aggregate base or large mats that can be removed after the hole is completed.

**Impact GEO-c-2: Subsidence in the Project area could adversely affect the structural integrity of the proposed Project.**

The Geotechnical Services Report did not address impacts on the pipeline due to the naturally occurring subsidence. The peat soils used to backfill the trench may have different rates of subsidence due to compaction that would occur

during construction. Although the pipeline would be built to comply with Federal and State standards, there is no information available to evaluate the effects on the structural integrity of the pipeline due to the naturally occurring subsidence. This could be a *potentially significant impact* that would be reduced to a **less-than-significant level** with implementation of the mitigation measure below.

#### **Mitigation Measure GEO-c-2**

The Applicant shall conduct a site-specific subsidence study and submit a report certified by a California registered engineering geologist or geotechnical engineer for the CSLC staff review and approval prior to approval of construction by CSLC. In addition, the applicant shall verify the pipeline integrity due to the subsidence potential through the pipeline structural analysis. An operational mitigation measure to monitor the subsidence over the life of the pipeline shall be developed and submitted as part of the subsidence study for CSLC staff review and approval. Further, the geotechnical report shall provide an estimate of the difference, if any, between the soils underlying the pipeline and those surrounding the pipeline.

- d. Soils identified by the USDA NRCS soil surveys with high shrink/swell potential are assumed to be roughly equivalent to expansive soils. Soil associations such as the Itano silty clay loam, Valdez silt loam, Kingile muck, Shinkee muck and the Ryde clay loam have moderate shrink/swell potentials. These soil associations are mapped within 3.4 miles of the proposed pipeline route. Expansive soils are identified in San Joaquin County as geologic hazards (San Joaquin County 1992) and represent a potential hazard to the maintenance of pipeline integrity within the proposed Line 57C Project route. Portions of the proposed pipeline would be located beneath the groundwater table where soils would not be subject to fluctuating water levels that could cause the soils to expand and contract. Portions of the pipeline that are above or within zones of fluctuating groundwater levels could be subject to expansive soils. The proposed Project would be required to engineer all pipeline alignments to CBC standards for expansive soils and pursuant to Federal standards for gas pipelines. Therefore, impacts related to expansive soils are considered **less than significant**.
- e. The Project proposes the construction of a natural gas transmission pipeline to increase the reliability of existing natural gas facilities and would not involve the



- 1 construction of any septic tank or other alternative wastewater disposal systems.
- 2 There would be ***no impact***.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.7 HAZARDS AND HAZARDOUS MATERIALS.</b>				
<i>Would the project:</i>				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 1 **Environmental Setting**

- 2 The presence of hazardous materials or other safety hazards could affect residents,  
3 workers, and visitors within and adjacent to the Project area including accidental releases,  
4 such as spills, or as a result of soil or groundwater contamination related to past uses of  
5 properties. Transportation of hazardous materials through or near the Project area could  
6 also present hazards.
- 7 The term “hazardous material” is defined in different ways for different regulatory  
8 programs. For purposes of this environmental analysis, the definition of “hazardous  
9 material” is similar to that in the California Health and Safety Code, section 25501,  
10 where “because of their quantity, concentration, or physical or chemical characteristics,  
11 (they) pose a significant present or potential hazard to human health and safety or to  
12 the environment if released into the workplace or the environment.”

“Hazardous waste” is a subset of hazardous materials. For the purposes of this environmental analysis, the definition of hazardous waste is the same as that in the California Health and Safety Code, section 25517, and in the California Code of Regulations, Title 22, section 66261.2, where “because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed”.

## **Project Site**

The Project site consists of a 17-acre construction yard and approximately 100 acres of mostly agricultural land. The existing terrain has been modified to allow for agriculture practices through construction of flood control levees and is generally level, with man-made agricultural ditches, channels, and levees. Vegetation is primarily agricultural crops with limited vegetation along the levees and drainage ditches. Hazardous materials are not used or stored along the proposed pipeline route. However, past uses of the Project site for agriculture, i.e., pesticides, or other activities could have resulted in the use and storage of hazardous materials and/or wastes and has the potential of being exposed during construction of the Project. The 17-acre construction yard is a gravel lot that does not currently store hazardous materials, but would store hazardous materials during construction, primarily those related to the maintenance of equipment (diesel fuel, hydraulic fluid, oil, etc.). All materials would be stored as required by law on site, and the construction yard would be fenced.

## **Transportation of Hazardous Materials within and Adjacent to the Project Area**

In general, hazardous materials are routinely transported by truck or rail. With few exceptions, section 31303 of the California Vehicle Code and DOT regulations prohibit the through-transportation of hazardous materials in residential neighborhoods and require that hazardous materials be transported via routes with the least overall travel time.

The U.S. Interstate 5 (I-5) is a major truck route approximately eight miles east of the proposed Project site. The main access route to the construction yard and the pipeline are from I-5 to SR-4. With the exception of high-level radioactive materials and certain poisons and explosives, all classes of hazardous materials can be transported on major roadways within and adjacent to the Project site. Because section 31303 of the

1 California Vehicle Code and DOT regulations require that hazardous materials be  
2 transported via routes with the least overall travel time, local roads near the Project site  
3 would be used for deliveries and pickup of hazardous materials.

4 Pursuant to Government Code section 65962.5, a database search was conducted in  
5 order to identify known areas containing hazardous materials within the Project area.  
6 The following databases were reviewed for information on potential hazardous releases  
7 in the Project area:

- 8 • California Department of Toxic Substances Control's (DTSC) Hazardous Waste  
9 and Substances Site List (Cortese List);
- 10 • California State Water Resources Control Board System for Water Information  
11 Management Compliance – Enforcement Action Order Documents;
- 12 • Central Valley Regional Water Quality Control Board, Leaking Underground  
13 Storage Tanks – Quarterly Report, April 2005;
- 14 • California Integrated Waste Management Solid Waste Information System  
15 Facility/Site General Summary (Inventory); and
- 16 • California State Water Resources Control Board, Leaking Underground Storage  
17 Tanks Search Results.

18 A review of these databases did not identify any sites that are currently on or adjacent  
19 to the proposed 6.4-mile pipeline route and associated facilities.

## 20 **Regulatory Setting**

### 21 **Federal**

#### 22 **Gas Pipelines**

23 The DOT, Office of Pipeline Safety, regulates the safety of gas transmission pipelines.  
24 All gas pipeline projects delivering gas through a distribution system must be designed  
25 and constructed to meet or exceed the Federal safety standards established in 49 CFR  
26 Part 192. These regulations include specific standards for material selection and  
27 qualification, design requirements, protection from internal, external, and atmospheric  
28 corrosion, and worker training, safety, and qualifications.

1    Hazardous Materials

2    Several Federal agencies regulate hazardous materials, including the EPA, the U.S.  
3    Nuclear Regulatory Commission, the Occupational Safety and Health Administration  
4    (OSHA), and the DOT. Applicable Federal regulations are contained primarily in Titles  
5    10, 29, 40, and 49 of the CFR.

6    Worker Safety

7    The DOT requires that gas pipeline operators meet certain qualifications. For this  
8    Project, the construction crews are not required to meet these qualifications, but when  
9    Line 57C is connected to the live system, the PG&E operators would be subject to the  
10   qualifications.

11   Hazardous Materials Transportation

12   The DOT has developed regulations pertaining to the transport of hazardous materials  
13   and hazardous wastes by all modes of transportation. The DOT regulations specify  
14   packaging requirements for different types of materials. EPA has also promulgated  
15   regulations for the transport of hazardous wastes. These more stringent requirements  
16   include tracking shipments with manifests to ensure that wastes are delivered to their  
17   intended destinations.

18   **State**

19   The California Environmental Protection Agency (Cal/EPA) establishes regulations  
20   governing the use of hazardous materials in the State. The Office of Emergency Services  
21   coordinates State and local agencies and resources for educating, planning, and warning  
22   citizens of hazardous materials, hazardous materials emergencies, including organized  
23   response efforts in case of emergencies. The California Highway Patrol and the California  
24   Department of Transportation (Caltrans) are the enforcement agencies for hazardous  
25   materials transportation regulations. Transporters of hazardous materials and waste are  
26   responsible for complying with all applicable packaging, labeling, and shipping regulations.

27   Department of Toxic Substances Control

28   Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste  
29   management and cleanup. Requirements place “cradle-to-grave” responsibility for  
30   hazardous waste disposal on the shoulders of hazardous waste generators.

1 Generators must ensure that their wastes are disposed of properly, and legal  
2 requirements dictate the disposal requirements for many waste streams, e.g., banning  
3 many types of hazardous wastes from landfills. Enforcement of regulations has been  
4 delegated to local jurisdictions that enter into agreements with DTSC for the generation,  
5 transport, and disposal of hazardous materials under the authority of the Hazardous  
6 Waste Control Law. State regulations applicable to hazardous materials are contained  
7 in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of  
8 the CCR that are applicable to hazardous materials management.

#### 9 Hazardous Materials Management Plans

10 In January 1996, Cal/EPA adopted regulations implementing a “Unified Hazardous  
11 Waste and Hazardous Materials Management Regulatory Program” (Unified Program).  
12 The six program elements of the Unified Program are: (1) hazardous waste generators  
13 and hazardous waste on-site treatment; (2) underground storage tanks; (3) above-  
14 ground storage tanks; (4) hazardous material release response plans and inventories;  
15 (5) risk management and prevention program; and (6) Uniform Fire Code hazardous  
16 materials management plans and inventories. The program is implemented at the local  
17 level by a local agency – a Certified Unified Program Agency (CUPA) - which is  
18 responsible for consolidating the administration of the six program elements within its  
19 jurisdiction. The San Joaquin Environmental Health Department and the Contra Costa  
20 County Division of Environmental Health are the CUPAs that serve the Project site.

21 State and Federal laws require detailed planning to ensure that hazardous materials are  
22 properly handled, used, stored, and disposed of, and, in the event that such materials  
23 are accidentally released, to prevent or to mitigate injury to health or the environment.  
24 California’s Hazardous Materials Release Response Plans and Inventory Law (#4 from  
25 above), sometimes called the “Business Plan Act,” aims to minimize the potential for  
26 accidents involving hazardous materials and to facilitate an appropriate response to  
27 possible hazardous materials emergencies. The law requires businesses that use  
28 hazardous materials to provide inventories of those materials to designated emergency  
29 response agencies, to illustrate on a diagram where the materials are stored on site, to  
30 prepare an emergency response plan, and to train employees to use the materials  
31 safely.

## Worker Safety

Occupational safety standards exist in Federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, Material Safety Data Sheets are to be available in the workplace, and employers are to properly train workers.

## **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address hazards and hazardous materials. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.

## Impact Discussion

a, b. The potential for accidental releases of hazardous materials could result from construction practices including equipment fuel leaks, e.g. hydraulic fluid, fuel spills, and other events. Prior to construction of Line 57C, the Applicant would notify all landowners and businesses along the access roads and within the construction area and provide details and scheduling information regarding the impending construction work. Construction would occur in a rural area and therefore would pose little risk to public safety based on the limited number of people that could be exposed to any Project-related hazards. A Spill Prevention, Control and Countermeasure Plan (SPCCP) would be prepared for the proposed Project and include action measures to minimize the potential for accidental releases of hazardous materials into the environment. The SPCCP would provide Project-specific measures, based on the *Water Quality Construction Best Management Practices Manual* (2004b), which includes steps to minimize the potential for a hazardous material release and would require cleanup and



1 containment supplies, such as straw waddles, silt fencing, and absorbent pads,  
2 to be kept on site.

3 In addition, the Applicant would use their *Hazardous Materials Business Plan*,  
4 *McDonald Island Underground Natural Gas Storage Facility* (PG&E 2005) and  
5 the *Emergency Plan Manual* (PG&E 2004a) with established guidelines and  
6 procedures to be followed in the event of an emergency associated with the  
7 proposed Project. The purpose of the Business Plan is to provide procedures  
8 and other directives to be carried out in the event of fire, explosion, earthquake,  
9 accidental release of hazardous materials or waste, or any similar emergency.  
10 This plan is designed to minimize hazards to human health, property, and the  
11 environment from any unplanned release of hazardous materials and/or wastes  
12 into the air, soil, or water, and has been prepared in accordance with Federal and  
13 State regulations as set forth in 40 CFR Part 265, Health and Safety Code  
14 (Chapter 6.95), and Titles 19, 22, and 27 of the California Code of Regulations.  
15 The program is reviewed annually with local agencies to ensure that the plan is  
16 current and that all personnel understand the plan as well as their personal  
17 responsibilities. Staff at the MDIGSF would operate and maintain the new  
18 pipeline, providing routine maintenance services and responding to emergency  
19 situations, in accordance with the *Hazardous Materials Business Plan, McDonald*  
20 *Island Underground Natural Gas Storage Facility*.

21 The standards in the Federal regulations become more stringent as human  
22 population density increases near a pipeline. 49 CFR Part 192 defines area  
23 classification, based on population density in the vicinity of the pipeline that  
24 corresponds to the minimum safety requirements. The class location unit is an  
25 area that extends 220 yards on either side of the centerline of any continuous  
26 1-mile length of pipeline. The four area classifications are defined as follows:

- 27 • **Class 1:** A location with 10 or fewer buildings intended for human  
28 occupancy.
- 29 • **Class 2:** A location with more than 10 but less than 46 buildings  
30 intended for human occupancy.
- 31 • **Class 3:** A location with 46 or more buildings intended for human  
32 occupancy or where the pipeline lies within 100 yards of any building

or small well-defined outside area occupied by 20 or more people during normal use.

- **Class 4:** A location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. In the Project area, the pipeline would cross land that has minimal housing and is mostly a Class 1 location except for a portion on McDonald Island adjacent to temporary agricultural housing (Figure 10). Navigable waterway crossings require Class 3 location safety factors and are thus effectively Class 3 locations. The entire pipeline has been designed to meet the factor requirements of a Class 3 area.

The Applicant would operate and maintain the new pipeline in accordance with all applicable regulations. The system would be constantly monitored and controlled via a SCADA system that detects pressure drops in the pipeline that could indicate a leak or other operating problem. Staff at the MDIGSF would operate and maintain the new pipeline to provide routine maintenance services and respond to emergency situations. The pipeline system would undergo routine aerial and ground inspection in accordance with the minimum DOT standards to observe right-of-way conditions and identify indication of leaks or evidence of pipeline damage.

Implementation of the SPCCP and Hazardous Materials Business Plan would reduce any potential hazard resulting from the transportation, use or disposal of materials, and minimize the potential for an accidental release of hazardous materials into the environment. Therefore, this impact would be considered ***less than significant***.

- c. Construction activities associated with the proposed Project would involve storage, transport and handling of hazardous materials. However, there are no existing or proposed schools within one-quarter mile of the pipeline and the construction yard. Therefore, the proposed Project would have ***no impact***.

- d. **Impact HAZ-d-1: Construction of the proposed Project could expose an unknown hazard that could create a significant hazard to the public or environment.**

1 The Project site is not located on a list of hazardous materials sites compiled  
2 pursuant to Government Code section 65962.5 (CA Dept. of Toxic Substances  
3 Control 2005, CVRWQCB 2005a and b, and CIWMB 2005b).

4 Although no soil or groundwater contamination has been identified onsite, there  
5 is the possibility that unknown hazards could exist on the site from previous  
6 agricultural uses, i.e., pesticides. If soil or items contaminated with hazardous  
7 materials in sufficient amounts to present a health risk are inadvertently  
8 encountered during construction, workers could be exposed to adverse health  
9 effects resulting in a *potentially significant impact*. In the unlikely event that  
10 contamination is encountered at a site during the installation of the pipeline, the  
11 appropriate agencies would be notified, including the DTSC. All necessary  
12 measures to identify the nature of the contaminants present, the extent of the  
13 contamination, and the remedial technologies available to protect human health  
14 and the environment would be implemented, but are not guaranteed to mitigate  
15 all potential risk of exposure to such hazards. However, implementation of the  
16 following mitigation measure would reduce the potential risk of exposure to  
17 contaminated soils by testing any potentially contaminated soils during  
18 construction and notification of potentially hazardous conditions by the County  
19 Certified Unified Program Agencies thus reducing this impact to a ***less-than-***  
20 ***significant level***.

#### 21 **Mitigation Measure HAZ-d-1**

22 During Project construction, the contractor shall monitor exposed soil for signs of  
23 contamination. If evidence of soil contamination is encountered during  
24 construction, work shall cease and an investigation will be performed by a  
25 qualified and approved environmental consultant to confirm contamination and  
26 determine its extent. The investigation will include sampling for laboratory  
27 analysis. This will determine what measures are necessary to determine how  
28 workers will be protected and how hazardous materials shall be handled and  
29 disposed of. Removal will be completed with an approved remediation plan by  
30 workers trained through the OSHA recommended 40-hour safety program  
31 (29 CFR 1910.120) shall remove hazardous materials. A health and safety plan  
32 will also be prepared by an approved and qualified industrial hygienist to protect  
33 the public and all workers in the construction area. As part of this process, the  
34 Applicant shall ensure that any necessary investigation and/or remediation

activities conducted in the Project site are coordinated with the County's Fire Departments, the Contra Costa County Department of Health Services, Division of Environmental Health, and the San Joaquin County Department of Environmental Health, and, if needed, other appropriate State agencies.

e. There are no public airports within two miles of the Project vicinity, and there are no Airport Use Plans with jurisdiction over the Project area. Further, the proposed Project would not result in the construction of new residences or result in businesses. Therefore, the proposed Project would have **no impact** on public airport-related safety hazards.

f. There is one abandoned private airstrip approximately one-half mile north of the pipeline on Bacon Island. However, the proposed Project would not result in the construction of new residences or result in businesses and **no impact** would occur.

g. Because the proposed Project would install a gas pipeline under existing roads, there would be no permanent modifications to road alignments, amount of traffic, or other changes to the environment that would interfere with an emergency response plan (See Item 15e, for a discussion of potential impacts to emergency response plans during construction of the proposed Project). Therefore, **no impact** would occur.

h. **Impact HAZ-h-1: Construction activities could cause a peat fire.**

Although largely surrounded by the Delta waterway and riparian corridors, as well as agricultural lands, the Project site would involve extensive excavation and trenching through peat soils that are susceptible to ignition and fire. A fire in the Project area could prohibit agricultural production or cause the loss of the temporary agricultural housing, resulting in a *potentially significant impact*.

Peat fires are difficult to extinguish and may continue to burn underground. However, implementation of the following mitigation measure would reduce the potential risk of peat fires during construction, maintenance, and operation to **less-than-significant levels**. Due to the shallow water table and with the implementation of the Mitigation Measure below, wetting the soils is not necessary.

**Mitigation Measure HAZ-h-1**

The Applicant shall develop and implement a peat fire prevention plan in addition to the fire protection plan required by the U.S. Department of Transportation, Office of Pipeline Safety. The plan shall be developed in consultation with the State Fire Marshall or other responsible fire-fighting agencies. The plan shall include specific measures to prevent ignition and spread of a peat fire, including, but not limited to: a “no smoking” policy in all work areas; required use of fire retardant blankets or other suitable barriers in areas where pipe welding, grinding, or cutting would occur; required presence of appropriate fire suppression equipment available at all time during activities that may result in ignition of peat soils; requirement of a training plan to all personnel prior to construction activities; and a two-hour fire watch following pipe welding, grinding and cutting activities.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.8 HYDROLOGY AND WATER QUALITY.</b>				
<i>Would the project:</i>				
a. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area, as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year floodplain structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 1 **Environmental Setting**

2 The 57C pipeline Project would be located in the western part of the Central Valley, in  
3 the Delta. The Project site is located in western San Joaquin County with a portion of  
4 the Project reaching into eastern Contra Costa County. The Central Valley is bounded  
5 on the west by the Coast Ranges and on the east by the Cascade Range and the Sierra  
6 Nevada. The valley has only one surface-water outlet, the Carquinez Strait east of San  
7 Francisco Bay. The Sacramento River drains the northern end of the Central Valley,

and the San Joaquin River drains much of the middle third. The two rivers join in the Delta and empty into the upper end of San Francisco Bay.

### Surface Water

#### Regional Hydrologic Setting

The 57C pipeline lies within the San Joaquin Delta Basin, which historically was a tidal marsh formed in an overflow area of the Sacramento and San Joaquin Rivers. During the early part of the 20<sup>th</sup> century, over 80 percent of the Delta was reclaimed through construction of levees. The pipeline will cross 34 irrigation ditches, 2 drainage canals and 4 perennial water bodies (Empire Cut, Latham Slough, Middle River, and Old River). Each of these water bodies is an interconnected network of tidally influenced channels regulated by dams, dykes, and levees in the Delta area (U.S. Department of Agriculture 1992).

None of the water bodies crossed by the proposed pipeline are listed on the National Wild and Scenic Rivers System or recognized as state-designated scenic rivers (U.S. Department of Agriculture 1992).

#### Flooding

The entire length of the pipeline would be within the 100-year flood hazard areas shown on Federal Flood Insurance Rate Maps (FEMA 2005). The success of the Delta levee system is intimately linked to surface water hydrology, water management facilities and operations, geomorphology and soils, and river hydraulics. Levee failures are more likely due to levee instability as a result of subsidence of the interior island land surface and resultant greater hydrostatic forces on the levees. Stability problems are also caused by the consolidation of levee foundation materials, and the most common modes of levee failure include waterside erosion, slope stability, internal levee seepage, and foundation seepage. Due largely to subsidence and the below sea level elevation of the Delta islands, failure of levees would result in flooded areas, as was seen on the Upper Jones Tract in 2004.

#### Surface Water Quality

The water quality in the Delta is managed by the CVRWQCB, by means of *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region (Basin Plan)* to prevent water quality from degrading in the Delta. The



1 water quality standards in the *Basin Plan* are defined by the water quality goals  
2 designating the use or uses to be made of the water. The CVRWQCB has designated  
3 beneficial uses for the waters of the Delta and identified the water quality standards for  
4 compliance with the Clean Water Act, section 303(c) (CVRWQCB 2004).

5 The beneficial uses of surface waters in the Project area include: municipal and  
6 domestic water supply; industrial service and process supply; agricultural irrigation;  
7 groundwater recharge; navigation; contact and non-contact recreation; commercial and  
8 sport fishing; migration of aquatic organisms; spawning reproduction and early  
9 development; wildlife habitat; and habitat for rare, Threatened, and Endangered  
10 species. The SWRCB determined that the quality of these waters does not fully support  
11 all of the beneficial uses assigned to the water bodies in the Project area. Water quality  
12 impacts are a result of tidal fluctuations; Sacramento River and San Joaquin River  
13 inflows; local agricultural, industrial, and municipal diversions and returns; and  
14 inadequate channel capacities (CSWRCB 1995).

15 Delta water is subject to large variations in salinity and mineral concentrations. The  
16 Delta is also vulnerable to many anthropogenic and natural sources of water quality  
17 degradation. The Delta is listed by the CVRWQCB as impaired. This is due to elevated  
18 levels of boron, chlorpyrifos, DDT, Group A Pesticides, electrical conductivity, mercury,  
19 and unknown toxicity (CVRWQCB 2005b). The quality of surface waters is impacted by  
20 ocean salinity intrusion, agricultural return waters, point-source and non-point-source  
21 pollution (both industrial and municipal), and atmospheric deposition. Old and Middle  
22 Rivers have also been identified as Category I watersheds in California's Unified  
23 Watershed Assessment. This is a part of the Clean Water Action Plan that is a national  
24 initiative to identify opportunities for finding comprehensive solutions to water quality  
25 problems in specific geographic areas. Category I watersheds are candidates for  
26 increased restoration activities due to impaired water quality or other impaired natural  
27 resource goals, with an emphasis on aquatic systems. Contaminated sediments may  
28 exist in the irrigation canals and drains from extensive pesticide use on the irrigated  
29 croplands (CVRWQCB 2004).

### 30 Surface Water Use

31 The Contra Costa Water District has one public water intake structure approximately  
32 one mile downstream of the proposed 57C Pipeline crossing at Old River at Rock  
33 Slough. Additionally, there are no public water intake structures within three miles  
34 downstream of the Empire Cut/Latham Slough or Middle River crossings. The nearest

1 pumping stations are the Banks Delta, and Tracy Pumping Plants located in Contra  
2 Costa County (> 20 miles upstream) (U.S. Bureau of Reclamation 2005).

3 In San Joaquin County, approximately 37 percent of the population is served by the  
4 public supply of surface water. Approximately one billion gallons per day of fresh  
5 surface water is withdrawn in San Joaquin County. The majority of the fresh surface  
6 water withdrawn is used for irrigation (approximately 93.7 percent). In Contra Costa  
7 County, approximately 96.9 percent of the population is served by the public supply of  
8 surface water. Approximately 400 million gallons per day of fresh surface water is  
9 withdrawn in Contra Costa County, the majority of which is used for thermoelectric  
10 power (approximately 99.4 percent) (USGS 2005a).

## 11 **Groundwater**

12 The proposed Project area is within the Tracy Sub-basin of the San Joaquin Valley  
13 Groundwater Basin. The principal water-bearing materials beneath the 57C pipeline  
14 facilities are younger and older alluvium and organic peat soils (U.S. Department of  
15 Agriculture 1992). The Tracy Sub-basin is defined by the aerial extent of  
16 unconsolidated to semi-consolidated sedimentary deposits bounded by the Diablo  
17 Range on the west; the Mokelumne and San Joaquin Rivers on the north; the San  
18 Joaquin River to the east; and the San Joaquin-Stanislaus County line on the south.  
19 The Tracy Sub-basin is drained by the San Joaquin River and one of its major westside  
20 tributaries; Corral Hollow Creek. The San Joaquin River flows northward into the  
21 Sacramento and San Joaquin Delta and discharges into the San Francisco Bay. The  
22 Tracy Sub-Basin water bearing formations are comprised of Continental deposits  
23 including Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger  
24 Alluvium (CA Department of Water Resources 2004).

25 Groundwater levels remain consistently near the surface throughout the Delta in  
26 perched zones where levels are dependent on the degree of active pumping.  
27 Groundwater levels in nearby wells range from 3 to 11 feet below ground surface (CA  
28 Department of Water Resources 2005). The elevation of most terrestrial areas in the  
29 Delta region are at or below sea level, with extensive areas reclaimed for agricultural  
30 purposes through the use of manmade levees. Overdraft of groundwater and  
31 compaction of the soils in the region has led to the subsidence of the land throughout  
32 the Project area to below sea level (U.S. Department of Agriculture 1992). The  
33 elevation of the Project area ranges from 0 to 15 feet below sea level. The length of the

1 Project area occurs in reclaimed lowlands with organic soils that must be continually  
2 drained to maintain upland characteristics.

3 Aquifers

4 The proposed Project area is within the Central Valley aquifer system. An “aquifer  
5 system” is defined as “a complex set of variably extensive, faulted, and interbedded  
6 aquifers (coarse-grained sediments) and aquitards (fine-grained sediments) that  
7 function regionally as a water-yielding unit” (Sneed 2001). The Central Valley aquifer  
8 system is formed primarily of sand and gravel with significant amounts of silt and clay,  
9 all of which have been eroded mainly from older rocks at the boundaries of the valley.  
10 Beds and lenses of fine-grained materials, such as silt and clay, constitute a significant  
11 percentage of the Central Valley aquifer system, and in most parts of the valley, fine-  
12 grained materials compose 50 percent or more of the aquifer system. The most  
13 extensive clay bed, which is named “E-clay”, consists primarily of Corcoran Clay of the  
14 Tulare Formation and underlies much of the western San Joaquin Valley.

15 The Central Valley aquifer system is divided into three subregions from north to south  
16 on the basis of surface water basins: Sacramento Valley, Sacramento-San Joaquin  
17 Delta, and San Joaquin Valley (Planert 1995). The proposed Project is within the Delta  
18 subregion.

19 Groundwater Quality

20 Delta water quality varies with low to high concentrations of salts and minerals, primarily  
21 due to tidal influence and the amount of agriculture in the area. Groundwater in  
22 agricultural areas can become excessively saline and damaging to crops because of  
23 evaporation of sprayed irrigation water, evapotranspiration of soil moisture and shallow  
24 ground water leave behind dissolved salts (Planert 1995).

25 Water quality in the Delta region varies greatly with respect to well depth, proximity to  
26 surface water bodies, time of year, degree of active aquifer pumping, and degree of  
27 saltwater intrusion. Much of the Delta region and San Joaquin Valley is in overdraft  
28 condition, which has resulted in an intrusion of poor-quality saline water from the west.  
29 Poor-quality groundwater moves eastward through the Delta at a rate of 140 to 150 feet  
30 per year and continued use of groundwater will eventually result in land subsidence,  
31 additional subsurface inflow of saline water, and abandonment of groundwater wells  
32 (U.S. Department of Agriculture 1992).

## Groundwater Use

Identification of water supply wells and springs along the proposed route was conducted by site reconnaissance surveys, contacting State agency staff at California Department of Water Resources (DWR) and Department of Health Services, and reviewing well and spring locations on USGS 7.5-minute topographic maps.

There are no public drinking water wells in the Project area due to poor quality groundwater. It is unknown whether private water supply wells exist in the Project area. Prior to construction, well locations will be verified by field survey to determine if they, or any other, unidentified wells are currently in use. The Applicant will, with the landowner's permission, test the wells to determine base line flow conditions as a means of determining any construction-related impacts on these wells. Surveys will be conducted prior to construction to ensure that any unidentified springs are avoided during construction.

## **Levee Stability**

There are 1,100 miles of man-made levees protecting the Delta islands from flooding, consisting of the following types:

- 165 miles of Federal Flood Control Project levees;
- 110 miles of Direct Agreement Levees; and
- 825 miles of Non-Project Levees.

The proposed Project would cross Non-Project Levees, which are not part of the Federal flood control project and are maintained by local reclamation and levee maintenance districts. They were not built to a common standard and have different heights and cross sections. There are currently three standards used for levees, as summarized in Table 2-4, Delta Levee Standards. Improvement and maintenance of Non-Project Levees is challenging because of poor foundations and regulations to protect levee wildlife habitat.

**Table 2-4: Delta Levee Standards**

Standard	Water-side slope	Landside slope	Height from Top of Levee to Water Level in a 1,000 Year Flood	Restoration Fund Requirements	Islands in the Project area
Hazard Mitigation Plan (FEMA Standard)	1.5:1	2:1	1.0 inch	Required for Federal assistance in case of a flood	Bacon Island, Palm Tract, Lower Jones Tract
PL-99 Standard	2:1	Varies with height of levee and depth of peat; ranges from 3:1 to 5:1	1.5 inches	Required for US Army Corps assistance in a Presidentially-declared Delta emergency	McDonald Island
Bulletin 192-82 (DWR's Standard)	2:1	Varies with depth of peat; ranges from 3:1 to 7:1	1.5 inches	No post-event restoration funds	

Source - Trigon, EPC.

Over time, the tidally influenced Delta island peat soils have subsided substantially resulting in island land surfaces 10 to 25 feet below sea level. The decrease in elevation requires the levees to hold back much more water than when they were first constructed. As a result of the increased pressure on the levees, constructed on sand, peat and organic sediments, about 35 levee failures have occurred since the 1980s. The main reason for levee failures are instability, seepage and overtopping caused by subsidence, cracks and fractures, encroachments, waterside erosion, deformation, seepage, sinkholes, rodent burrows and poor foundation conditions (Delta Protection Commission 2005a).

There is a two-in-three chance of catastrophic flooding and significant change in the Delta by 2050 caused by 100-year recurrence interval floods or earthquakes (Mount 2004).

### **Regulatory Setting**

#### **Federal and State**

##### **Federal Emergency Management Agency**

The Federal Emergency Management Agency (FEMA) is responsible for determining flood elevations based on Corps studies and for distributing Flood Insurance Rate Maps, which are used in the National Flood Insurance Program (NFIP). Participation in the NFIP provides an opportunity for property owners in the community to purchase

flood insurance that is made available, provided that the community complies with FEMA requirements for maintaining flood protection and managing development in the floodplain. Federal floodplain regulations are implemented at the local level by Contra Costa and San Joaquin Counties Flood Control and Water Conservation Districts. The FEMA allows non-residential development in the floodplain, provided it meets regulatory standards for that type of development.

#### Clean Water Act - Water Quality

Section 303 of the CWA requires states to adopt water quality standards for all surface water of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards.

Title 40 of the Code of Federal Regulations (40 CFR) includes EPA regulations to implement the National Pollutant Discharge Elimination System (NPDES) permit system, which was established in the CWA to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Section 402 of the CWA contains the general requirements for NPDES permits. Section 401 of the CWA (described in more detail in Section 4.5 Biological Resources) specifically addresses projects which result in the dredging or filling of Waters of the U.S. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Two types of non-point source discharges<sup>2</sup> are controlled by the NPDES program – non-point source discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. There is no municipal stormwater system in the Project area. The goal of the NPDES non-point source regulations is to improve the quality of stormwater discharged to receiving waters to the “maximum extent practicable” through the use of BMPs. The BMPs can include the development and implementation of various practices including educational measures

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2 Non-point sources diffuse and originate over a wide area rather than from a definable point. Non-point pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines of discrete conveyances.

(workshops informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters) and structural measures (filter strips, grass swales and detention ponds).

The SWRCB and the Regional Water Quality Control Boards (RWQCB) are responsible for ensuring implementation and compliance with the provisions of the Federal CWA, California's Porter-Cologne Water Quality Control Act, and NPDES programs. Along with the SWRCB and RWQCB, water quality protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities.

The proposed Project site is situated within the jurisdiction of the CVRWQCB (Region 5), which has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. Water quality objectives for the Sacramento and San Joaquin River Delta are specified in *The Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin* (Basin Plan) prepared by the CVRWQCB in compliance with the Federal CWA and the State Porter-Cologne Water Quality Control Act (CRWQCB 2004). The Basin Plan establishes water quality objectives, and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because the Project site is located within the CVRWQCB's jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

#### *Construction Site Runoff Management*

The SWRCB adopted a State-wide general NPDES permit for stormwater discharges associated with construction activity (General Permit) in August 1999. Performance standards for obtaining and complying with the General Permit are described in NPDES General Permit No. CAS000002, Waste Discharge Requirements, Order No. 99-08-DWQ. The General Permit requires a General Construction Activity Stormwater Permit and preparation of a SWPPP. Development of the proposed Project would be required to comply with the General Permit because it is larger than one acre.

Examples of typical construction BMPs completed in SWPPPs include: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils;

storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface water. The discharger must also install structural controls, such as sediment control, as necessary, which will constitute Best Available Technologies to achieve compliance with water quality standards.

### *Construction Dewatering*

Dewatering during construction is sometimes necessary to keep trenches or excavations free of standing water when improvements or foundations/footings are installed. Clean or relatively pollutant-free wastewater that poses little or no threat to water quality may be discharged directly to surface water under certain conditions. The CVRWQCB has adopted a general NPDES permit for short-term discharges of small volumes of wastewater from certain construction-related activities. Permit conditions for the discharge of these types of wastewaters to surface water are specified in “General Order for Dewatering and Other Low-Threat Discharges to Surface Waters” (Order No. 5-00-175, NPDES No. CAG995001). Discharges may be covered by the permit provided they are (1) either four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring, and reporting, receiving water limitations, and discharge prohibitions.

### **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address hydrology and water quality. San Joaquin County published the “San Joaquin County General Plan 2010 Volume I: Policies/Implementation” in July 1992. Contra Costa County published “Contra Costa County General Plan 1995-2010” in July 1996.



1 **Impact Discussion**

2 a, f. **Construction**

3 Construction of the proposed Project would involve earth-disturbing activities that  
4 could discharge sediment or other pollutants e.g., petroleum products or  
5 materials such as cement, into the Delta via runoff from the construction sites  
6 along the pipeline route. Because activities associated with the proposed Project  
7 would disturb more than one acre of land, the Applicant would be required to  
8 obtain and comply with the NPDES State General Construction Activity  
9 Stormwater Permit adopted by the SWRCB. The general permit is intended to  
10 ensure compliance with State water quality objectives and water protection laws  
11 and regulations, including those related to waste discharges, in compliance with  
12 the State Porter-Cologne Water Quality Control Act. As part of the NPDES  
13 permit, the Applicant will prepare a SWPPP, which would require erosion control  
14 measures and other construction BMPs, including procedures for hazardous  
15 material storage and refueling, in addition to the use of materials such as straw  
16 waddles or silt fencing where necessary and appropriate. All construction  
17 personnel would be required to comply with the conditions of any permit obtained  
18 for this Project.

19 The Project site is within the jurisdiction of the CVRWQCB (Region 5), which has  
20 the authority to implement water quality protection standards through the  
21 issuance of permits for discharges to waters at locations within its jurisdiction.  
22 Water quality objectives for the Delta are specified in *The Water Quality Control*  
23 *Plan for the Sacramento River Basin and San Joaquin River Basin* (Basin Plan),  
24 prepared by the CVRWQCB in compliance with the Federal CWA and the State  
25 Porter-Cologne Water Quality Control Act (CRWQCB 2004). The Basin Plan  
26 establishes water quality objectives and implementation programs to meet stated  
27 objectives and to protect the beneficial uses of water in the Sacramento-San  
28 Joaquin River Basin. Because the Project is located within the CVRWQCB's  
29 jurisdiction, all discharges to surface water or groundwater are subject to Basin  
30 Plan requirements.

31 In addition, construction activities would require dewatering of the pipeline trench  
32 and discharging water used for hydrostatic testing. The CVRWQCB has also  
33 adopted a general NPDES permit for short-term discharges of small volumes  
34 of wastewater from certain construction-related activities as specified in the

Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters, Order No. 5-00-175, NPDES No. CAG995001. Discharges may be covered by the permit provided they are either four months or less in duration, or the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring and reporting, receiving water limitations, and discharge prohibitions.

Because the proposed Project would comply with Federal and State water quality standards and applicable NPDES General Permits, water quality impacts from construction of the proposed Project would be ***less than significant***.

### Operation and Maintenance

Although the pipeline would be built to Federal and State safety standards, small leaks could occur along the pipeline alignment. The proposed Project includes implementation of a SCADA system that monitors pressure losses in the pipeline caused by leaks. Any leaks in the pipeline would result in gas escaping into the surrounding soil, eventually escaping to the surface and into the air. Since natural gas is much lighter than air, leaks will result in gas escaping into the atmosphere through the water column. Any detectable leak will be fixed to Federal and State standards to prevent any possible impacts to water quality. Further, natural gas has not been found to affect water quality from transmission pipeline leaks.

Operation and maintenance of the pipeline could require minor patch work if sections of pipe are found to be leaking. During patch work for these leaks, a trench would be dug around the leak for repair. Linear projects disturbing five or more acres of land must obtain coverage under the NPDES State Construction General Permit. However, at the time of the repair a NPDES permit for construction activities would not be required for maintenance/repair areas of less than one acre. Further, the Applicant would use, maintain, and update their SWPPP and SPCCP plans to prevent soils and contaminants from entering stormwater runoff during any work along the pipeline route. This would result in a ***less-than-significant impact***.

- b. The proposed Project would require approximately 1,175,000 gallons of water during construction, to be supplied from the landowners on McDonald and Bacon Islands. Water for the Project would be supplied from existing irrigation ditches that receive surface water from the Delta. The existing surfaces along the utility alignments would be restored after pipeline installation. The McDonald Island Valve Lot expansion and 30-foot by 30-foot valve lot on Palm tract would not adversely affect groundwater recharge due to their relatively small size and the use of pervious surface material (gravel). Therefore, the proposed Project would not alter groundwater recharge, and impacts to groundwater supply would be **less than significant**.
- c, d. Because the proposed Project would not pave currently unpaved areas, the amount of impervious surfaces in the Project site would not increase. Soil surfaces covering the trenches would be graded to conform to the existing grade and all stormwater would percolate into the soil or runoff via sheet flow into existing agricultural fields. Additional gravel added at the McDonald Island expansion area would not substantially alter drainage patterns or runoff characteristics because gravel is a pervious surface material. There would be no change to the site's existing drainage pattern and no increase in the amount or rate of runoff resulting in flooding or increased sedimentation rate. Therefore, impacts would be **less than significant**.
- e. The gas pipeline would be installed underground and, therefore, would not increase impervious surface area resulting in an increase in surface runoff in the Project area. Further, the construction and expansion of valve lots would not result in a significant change to runoff characteristics due to the relatively small size and use of gravel, a pervious surface material. Therefore, the proposed Project would result in **no impact**.
- g, h. The Project consists of construction and operation of a gas pipeline and would not result in the construction of housing. The proposed Project is located in the FEMA'S 100-year floodplain. However, the proposed Project does not include the development of structures that would impede or redirect flood flows or cause people to permanently occupy the area. Therefore, there would be **no impact**.

i. **Impact HYD-i-1: Levee failure could damage the proposed Project.**

As discussed in Items g and h above, the proposed Project would not result in the construction of houses or place people at risk from floods. However, the proposed Project would cross six levees. HDD techniques used for construction of the proposed Project would start and end more than 2,100 feet and 2,300 feet, respectively, from the levees and would be a minimum of approximately 60 feet below the levees and waterways, which would reduce the potential for uplift pressures beneath the levee that could result in levee instability (Kleinfelder, Inc. 2005). This would reduce the potential for the proposed Project to induce a levee breach.

However, as discussed in the setting, there is a two-in-three chance of catastrophic flooding and significant change in the Delta by 2050 due to 100-year recurrence interval floods or earthquakes. During the early design phase of this Project, the Applicant had a scour analysis prepared by HDR (2005), modeling the size and depth of a potential scour hole that could result from a levee breach. The following mitigation measure, as suggested by the scour report would protect the pipeline in the event of a levee breach, reducing this impact to a ***less-than-significant level***.

**Mitigation Measure HYD-i-1**

The Applicant shall design the pipeline such that the pipe depth will be at least 70 feet deep for a distance equal to 40 percent of the scour hole length, measured from the center of the levee. After this distance, the pipeline can begin a gradual ascent toward the surface. However, the pipe shall not reach the surface within a distance less than 2,100 feet from the center of the levee for the Empire Cut crossing and 1,900 feet from the center of the levee for the Old River Crossing.

j. There are no lakes, oceans or volcanoes on or near the proposed Project site, therefore, there would be ***no impact*** resulting from seiche, tsunami, or mudflow.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.9 LAND USE AND PLANNING.</b>				
<i>Would the project:</i>				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating on environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 1 **Environmental Setting**

2 Agriculture is the predominant land use within the Project area. San Joaquin and  
3 Contra Costa Counties both include the traditional land use mix characteristic of many  
4 urban areas. However, agricultural lands within these counties are highly valued for  
5 economic as well as biological, aesthetic, and recreational values. In response to  
6 pressures for urban development and expansion, in an effort to preserve agricultural  
7 lands, San Joaquin County emphasizes the accommodation of development within  
8 existing urban areas of the County and infill development (San Joaquin County 1992).  
9 Contra Costa County has defined an urban limit line to establish urban boundaries and  
10 prevent subdivision of valuable agricultural lands, reflecting Measure C – 1990, which  
11 establishes the County's 65/35 Land Preservation Standard (Contra Costa County  
12 1996).

The California Public Utilities Commission has sole and exclusive jurisdiction over the siting and design of the Project because it authorized the construction and maintenance of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and permitting, the Applicant has considered local and State land use plans and policies, and local land use priorities and concerns as part of its environmental review process. The Project area also includes a complex mix of Federal, State and local jurisdictions associated with the Delta waterways and associated habitats.

Land uses within the Project area are primarily dominated by a mosaic of agriculture uses and Delta waterways and irrigation ditches. Housing in the area consists of a few abandoned houses – one near the west levee and two near the east levee on Bacon Island – and temporary housing trailers on McDonald Island. There is also an office building for agricultural operation, a cafeteria for farm workers and two warehouse buildings for farm maintenance on McDonald Island. The MDIGSF is a large-scale industrial facility that has been in existence for over 30 years.

## **County General Plan and Zoning Ordinance Land Use Designations**

The General Plan land use designation for the proposed pipeline alignment is Open Space and Public Services in Contra Costa County (Pietras 2005) and General Agriculture and Resource Conservation in San Joaquin County (San Joaquin County CDD 2005a). The parcels within the proposed pipeline alignment in San Joaquin County are zoned General Agriculture (San Joaquin County CDD 2005b), and the proposed alignment in Contra Costa County is zoned A-3- Heavy Agricultural (Pietras 2005). The intent of the General Agriculture zoning district is to provide for continued commercial agricultural operations consistent with the General Plan (San Joaquin County 19950).

## **Regulatory Setting**

### **Federal**

There are no Federal regulations related to land use relevant to the Project.

1   **State**

2   California State Lands Commission

3   The CSLC has authority over the State's public trust lands. In carrying out its  
4   management responsibilities, the Commission commonly leases trust lands to private  
5   and public entities for uses consistent with the doctrine. The CSLC requires a Right-of-  
6   Way Lease for roadways, power lines, pipelines, or outfall lines when they cross  
7   property administered by the CSLC (CSLC 2005).

8   Delta Protection Commission

9   The DPC is a State agency charged with the preparation and implementation of a  
10   regional plan to address land uses and resource management in the Delta area. The  
11   DPC adopted the *Land Use and Resource Management Plan for the Primary Zone of*  
12   *the Delta* in February 1995. This plan includes a Utilities and Infrastructure section with  
13   policies and recommendations that include the following:

- 14       • Locate new construction in existing utility or transportation corridors, along  
15       property lines, or along edges of fields (P-1);
- 16       • Bury pipelines deep enough to avoid conflicts with normal agricultural or  
17       construction activities (P-1); and
- 18       • Consolidate structures needed for gas extraction to minimize the displacement of  
19       agriculture (R-7).
- 20       • Additionally, other recommended mitigation by the DPC includes the following:
- 21       • Avoid pipeline construction on and near productive agricultural lands and  
22       operations during the harvest season;
- 23       • Bury the pipeline a minimum of two feet below the bottom of existing irrigation  
24       and drainage ditches;
- 25       • If burying the pipeline shallower than DPC recommendations, obtain a  
26       landowner's agreement to do so;
- 27       • Weight or anchor the pipeline in areas where saturated soil may cause the  
28       pipeline to float; and

- Submit engineering designs and supporting soil studies to the DPC for review, if requested.

### The Reclamation Board

The Reclamation Board's mission is to oversee flood control along the Sacramento and San Joaquin Rivers and their tributaries in cooperation with the Corps. The Board works with various agencies of the Federal, State, and local governments in establishing, planning, constructing, operating, and maintaining flood control works. The Reclamation Board issues encroachment permits for projects crossing multiple Reclamation Districts.

## **Local**

### San Joaquin County General Plan

The following objectives and policies related to land use from the San Joaquin County General Plan were considered in this analysis:

#### Infrastructure Services Objectives (Chapter IV)

3. To protect land uses from the placement of utility corridors across property at inappropriate locations.

#### Infrastructure Services Policies (Chapter IV)

6. The County shall encourage utilities to route their facilities along property lines and where they will not interfere with agricultural operations or other land use activities.

### San Joaquin Development Title

The *San Joaquin County Development Title* (1992) implements the *General Plan* and contains specific information on zoning and development application requirements, as well as standards and regulations relating to such issues as infrastructure, natural resources, signs, setbacks, lot and yard requirements, and use types.

### San Joaquin County Multi-Species Habitat Conservation Plan (SJMSCP)

San Joaquin County and other participating agencies have prepared the SJMSCP with the goal of protecting special-status plants and wildlife and their habitats, while allowing



for planned growth in the County. This protection is accomplished through identification of important habitats and habitat features to aid in the development of protection areas, establishing funding mechanisms through which Project proponents can provide replacement habitat while enabling them to meet their no net loss of habitat value goals. SJMSCP participants under the SJMSCP may conduct SJMSCP permitted activities that result in or could result in “incidental take” of listed species and other unlisted species should they become listed.

## Contra Costa County General Plan

The following goals and policies related to land use from the Contra Costa County General Plan were considered in this analysis:

### Land Use Goals

**3-A.** To coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County’s quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage.

**3-C.** To encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.

**3-M.** Protect and promote the economic viability of agricultural land.

### Primary Zone of the Delta Policies

**3-53.** All public and private development activities within the Primary Zone of the Delta shall be consistent with the goals, policies and provisions of the “Land Use Resource Management Plan for the Primary Zone of the Delta as adopted and as may be amended by the Delta Protection Commission.

## Contra Costa County Code Title 8 – Zoning

The *Contra Costa County Code Title 8 – Zoning* (2001) defines the permitted uses by zoning district within the County. Divisions 82 and 84 are part of *Title 8 – Zoning* and apply to and regulate all private and/or public uses of private and/or public land within the unincorporated territory of Contra Costa County. Division 82 of *Contra Costa County Title 8 – Zoning* provides general regulations for the County. Division 84 of *Title 8* provides the Land Use Districts (zoning) for the County.

## Local Reclamation Districts

The local Reclamation Districts maintain the “nonproject” levees in the Delta in accordance with the standards set forth by the DWR and the Bureau of Reclamation. “Nonproject” levees are those that were not constructed by the Corps as part of the Sacramento Flood Control Project authorized by the Federal government in 1917. The proposed pipeline route would cross levees under the jurisdiction of the local Reclamation Districts at Empire Cut/Latham Slough, Middle River, and Old River. The Reclamation Districts also have jurisdiction over the large internal drainage canals on the islands. Reclamation jurisdiction begins 300-feet to the interior of the levee bases.

## Transmission Agency of Northern California Conservation Easement

The TANC granted a conservation easement to the CDFG on a portion of Palm Tract in accordance with the California-Oregon Transmission Project Waterfowl Mitigation Plan. The easement covers approximately 1,080 acres, of which 330 acres are designated as Waterfowl Management Units, 739 acres are designated as Farm Units, and 7 acres are designated for Recreation. Portions of the easement are also designated for the Reclamation District. The purpose of the conservation easement is to protect the waterfowl habitat values by restricting the use of the property to the production of crops, recreation, hunting, and waterfowl habitat preservation. Additional uses and practices could be allowed with approval from CDFG as long as they do not adversely affect the waterfowl management units. Approximately 2,500 feet of the proposed Project are located within the TANC conservation easement.

## Impact Discussion

- a. The Project proposes to construct an underground natural gas transmission line across agricultural lands and Delta waterways between an existing facility and an existing pipeline segment on Palm Tract. The proposed Project would not cross an established community and it would regrade and restore work areas and access roads after construction. Therefore, **no impact** would occur.
- b. The proposed pipeline route would cross lands under the authority of San Joaquin and Contra Costa Counties as well as the CSLC, CDFG, and Local Reclamation Districts 2030, 2038, 2028 and 2024. Although the Project is not subject to local zoning regulations, the Applicant has considered such regulations as part of its environmental review process. The Contra Costa County General

1 Plan designates the Palm Tract parcel as “Public Services and Open Space”  
2 (Pietras 2005 and Contra Costa County 1996) and it is located within the “A-3”-  
3 Heavy Agricultural zoning district (Pietras 2005). Oil and gas drilling and  
4 production activities and alterations to existing facilities are permitted land uses  
5 under the Heavy Agricultural zoning district. The Project area within San Joaquin  
6 County is designated General Agriculture by the County’s General Plan  
7 (assessor’s parcel 129-080-53 is also designated Resource Conservation) and is  
8 located within the “AG”- General Agriculture zoning district (San Joaquin CDD  
9 2005a). The Project would fall under the land use category “Major Utility  
10 Services,” which is defined as: “*Utility services involving major structures.*  
11 *Typical uses include: natural gas transmission lines and substations, petroleum*  
12 *pipelines and wind farms.*” (Martin 2005). Major Utility projects in the General  
13 Agriculture zoning district are allowed, but subject to discretionary approval by  
14 the Community Development Department (San Joaquin County 1995). In  
15 addition to local land use designations, the Project area lies within the Primary  
16 Zone of the Delta Protection Act of 1992, which was adopted as a  
17 comprehensive, long-term management plan for land uses within the Delta  
18 region to specifically protect agriculture, wildlife habitat and recreation areas  
19 within the Delta (Delta Protection Commission 2001).

20 The Applicant proposes a 150-foot-wide temporary use area for pipeline  
21 trenching, which would accommodate the equipment needed to place the  
22 24-inch-diameter pipe into the trench, up to a 20-foot-wide trench, and a  
23 containment area for large spoil-piles of loose peat material. Each of the five  
24 HDDs would require an approximately 0.69-acre temporary use area for  
25 equipment set up at the entry point, and 100-foot wide temporary use areas for  
26 the HDD “pull sections” (the length of which would depend on the HDD length).  
27 In addition, the three large bores (Empire Cut/Latham Slough, Middle River, and  
28 Old River) would require an approximately 0.69-acre temporary use are at the  
29 exit point for hole intersect drilling operations. A 50-foot-wide permanent  
30 easement is proposed for operation of the pipeline and would accommodate  
31 typical agricultural practices. The easement would be purchased from the  
32 existing landowners, who would also be compensated for the use of temporary  
33 use areas.

34 The Applicant would be required to obtain a right-of-way lease for portions of the  
35 pipeline route crossing CSLC lands, and would also be required to obtain a non-

discretionary encroachment permit from the Reclamation Board and all necessary ministerial permits from local governments, which emphasize the importance of agricultural land preservation. Permits could also be necessary for the construction staging yard in Holt, although the lot is currently used to store equipment and vehicles.

Prior to commencement of construction activities, the Applicant would complete easement acquisitions and finalize land surveys to locate the centerline and temporary use areas. The temporary use areas (e.g., 150-foot-wide construction right-of-way, HDD pull sections) would be surveyed and staked, along with existing utility lines and other sensitive resources, identified by Federal and State agencies, to prevent accidental damage during pipeline construction.

The proposed pipeline would cause temporary adverse impacts to the agricultural lands within the proposed route. However, agricultural production would resume within the pipeline right-of-way following completion of the Project. Mitigation Measure AGR–a, c–2 would ensure that operation of the pipeline would not result in the conversion of agricultural lands to non-agricultural uses. Continued agricultural production would be consistent with the applicable General Plans and land use designations. Therefore this impact is considered ***less than significant***.

- c. The portion of the proposed alignment that lies within San Joaquin County is covered under the SJMSCP, which is intended to comprehensively minimize and mitigate impacts to listed plant, fish and wildlife species. The Applicant is not planning to participate in this plan, and will obtain incidental take permits from the USFWS and CDFG, if necessary. More information on the SJMSCP is in Section 4, Biological Resources.

The proposed Project would end on Palm Tract on a parcel covered under a conservation easement, granted by the TANC to CDFG as part of the “California-Oregon Transmission Project.” Preconstruction consultation has been initiated between the Applicant and the CDFG. The conservation easement states that the installation of utility structures or lines are inconsistent uses; however, because the Line 57C pipeline would be buried and the valve lot is small in size, CDFG staff concurs that the proposed Project would not conflict with the purpose of the conservation easement (Burkholder, 2006). Because the proposed Project

- 1 would not conflict with the SJMSCP or the conservation easement, ***no impact***
- 2 would occur.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.10 MINERAL RESOURCES.</b>				
<i>Would the project:</i>				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 1 **Environmental Setting**

### 2 **San Joaquin County**

3 Extractive resources within San Joaquin County include sand, gravel, and natural gas  
4 as well as peat soil and gold and silver, to a lesser extent (San Joaquin County 1992).  
5 San Joaquin County, in conjunction with the State Mining and Geology Board, has  
6 developed “*Significant Sand and Gravel Aggregate Resource Sectors*” (San Joaquin  
7 County 1992). Alluvial fans and terrace deposits located along the western edge of the  
8 Delta are potential aggregate sources.

9 Natural gas is the most valuable mineral resource within the Delta area and is one of  
10 three extractive, non-renewable resources within the San Joaquin County Delta area. Its  
11 extraction is considered less disruptive to the landscape than sand and gravel  
12 extraction. Large reserves of natural gas have been discovered and developed in the  
13 Delta area within the Rio Vista and McDonald Island gas fields. The McDonald Island  
14 gas field has been largely depleted, and is now used for natural gas storage by the  
15 Applicant.

1    **Contra Costa County**

2    Contra Costa County recognizes the value of mineral resources as a supply for  
3    construction-related materials to accommodate local development as well as a source  
4    of significant employment within the industry. The county, in conjunction with the State,  
5    has identified significant aggregate resource areas in the Mount Zion, Mount Diablo,  
6    Port Costa and in the area of Byron (Contra Costa County 1996).

7    **Regulatory Setting**

8    **Federal**

9    There are no Federal regulations related to mineral resources relevant to the Project.

10   **State**

11   There are no State regulations related to mineral resources relevant to the Project.

12   **Local**

13   San Joaquin General Plan has elements that address mineral resources. San Joaquin  
14   County published the “San Joaquin County General Plan 2010 Volume I:  
15   Policies/Implementation” in July 1992. Contra Costa’s general plan has no policies or  
16   goals related to mineral resources relevant to the Project.

17   **Impact Discussion**

18   a, b. Mineral resource development surrounding the Project area includes aggregates,  
19       natural gas and peat. Natural gas development has historically been and is  
20       currently active within the Project area. The Project site is not located within the  
21       *Significant Sand and Gravel Aggregate Resource Sectors* of the San Joaquin  
22       General Plan (1992) and is not located within the Mineral Resource Areas  
23       identified in the Contra Costa County General Plan (1996). **No impact** related to  
24       the loss of availability of a known mineral resource of value to the region and the  
25       residents of the State or a locally important mineral resource recovery site  
26       delineated on a local general plan, specific plan, or other land use plan would  
27       result from the proposed Project.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.11 NOISE.</b>				
<i>Would the project result in:</i>				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## **Environmental Setting**

### **Fundamentals of Environmental Sound and Noise**

Sound can be described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the intensity of the pressure vibrations that make up a sound. The pitch of the sound is defined by the frequency of the sound's pressure vibration. Because humans are not equally sensitive to a given sound level at all frequencies, a special scale has been devised that specifically relates noise to human sensitivity. The A-weighted decibel scale (dBA) does this by placing more importance on frequencies that are more noticeable to the human ear.

Noise is typically defined as unwanted sound. Typically, noise in any environment consists of a base of steady "background" noise made up of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to virtually continuous noise from traffic on a major highway. Table 2-5 lists representative environmental noise levels.

Several rating scales have been developed to analyze the adverse effect of noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the volume of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- $L_{eq}$ , the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the  $L_{eq}$  of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- $L_{dn}$ , the Day Night Average Level, is a 24-hour average  $L_{eq}$  with a 10 dBA penalty applied to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime.

**Table 2-5: Noise Ranges of Common Activities**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 100 feet		
	--100--	
Gas Lawnmower at 3 feet		
	--90--	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	--80--	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	--70--	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	--60--	
		Large Business Office
Quiet Urban Area during Daytime	--50--	Dishwasher in Next Room
Quiet Urban Area during Nighttime	--40--	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	--30--	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	--20--	
		Broadcast/Recording Studio
	--10--	
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 1998.

- 1 •  $L_{min}$ , the minimum instantaneous noise level experienced during a given period of
- 2 time.
- 3 •  $L_{max}$ , the maximum instantaneous noise level experienced during a given period
- 4 of time.
- 5 Noise caused by natural sources and human activities is usually well represented by
- 6 median noise levels during the day, night, or over a 24-hour period. Environmental
- 7 noise levels are generally considered low when the  $L_{eq}$  is below 60 dBA, moderate in

the 60 to 70 dBA range, and high above 70 dBA. Examples of settings with low daytime background noise levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise settings are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most people living or working in urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) accept the higher noise levels commonly associated with these land uses.

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to a receptor increases. Other factors, such as the weather and reflecting or shielding, also help intensify or reduce noise levels at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically “hard” locations, i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials, and 4.5 dBA at acoustically “soft” locations, i.e., the area between the source and receptor is normal earth or has vegetation, including grass. Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively (Inverse Square Law). Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

## **Fundamentals of Groundborne Vibration**

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured in the U.S. as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for most people.

Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate groundborne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants.

Construction vibrations can either be transient, random, or continuous. Transient construction vibrations occur from blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jack hammers, pavement breakers, and heavy construction equipment.

The general human response to different levels of groundborne vibration velocity levels is described in Table 2-6.

**Table 2-6: Human Response to Different Levels of Groundborne Vibration**

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: Federal Railroad Administration, 1998.

## Existing Conditions

The proposed Project is located in an area that is rural in character, and noise levels in the vicinity are typical to those of a rural environment. Consequently, conditions in and around the Project site are relatively quiet, and noise levels are low.

1    **Regulatory Setting**

2    **Federal**

3    There are no Federal noise regulations that pertain to the proposed Project.

4    **State**

5    There are no State noise regulations that pertain to the proposed Project.

6    **Local**

7    The proposed Project would be located in San Joaquin and Contra Costa Counties.  
8    Both counties have noise standards for various land uses included in their General  
9    Plans. The only uses in the vicinity of the proposed Project are residential and  
10   educational. The applicable noise standards for each of these uses are listed below:

11   San Joaquin County

12       65 dB L<sub>dn</sub> or less for residential development

13       60 dB L<sub>dn</sub> or less for schools, group care facilities, and hospitals

14   Contra Costa County

15       60 dB L<sub>dn</sub> is normally acceptable for single family residential uses

16       65 dB L<sub>dn</sub> is normally acceptable for multi-family residential uses

17       70 dB L<sub>dn</sub> is normally acceptable for multi-family schools, libraries, churches,  
18       hospitals, and nursing homes

19   **Impact Discussion**

20   a,d. The proposed Project consists of a natural gas pipeline that would be placed  
21       underground and would not generate any noise during operation. Pipelines are  
22       not known to be producers of noise. Because the pipeline would be  
23       underground, any noise that is generated would be silenced and would not be  
24       audible at ground level.

**Impact NOI-a-1: Construction activities would create noise in excess of standards.**

During construction of the proposed Project, noise would be generated temporarily by the heavy-duty construction equipment. Table 2-7 below shows typical noise levels generated by heavy-duty construction equipment. As shown, some of the equipment that is expected to be used during construction could generate high levels of noise. Temporary agricultural housing is located approximately 60 feet from the proposed pipeline. Construction in the vicinity of these receptors would be temporary, and noise would mostly be of concern during nighttime hours when residents are trying to sleep. Construction of the proposed Project would most likely occur mostly during recognized non-sleep hours. During HDD activities and hydrostatic testing, however, construction activity would be required to occur continuously over the course of several days. Sleep disturbance at nearby receptors could be an issue during this time, resulting in a *potentially significant impact*. The mitigation measure below would ensure that construction does not occur during sensitive nighttime hours except when HDD activities and hydrostatic testing is ongoing. Because construction activity hours would be limited, and because HDD activities and hydrostatic testing would be of short duration, the proposed Project would not expose persons to permanent noise levels in excess of established standards, and this would be a ***less-than-significant impact*** with mitigation.

**Mitigation Measure NOI-a-1**

During HDD activities and hydrostatic testing, the following construction noise reduction measures shall be implemented:

- Use heavy-duty mufflers for stationary equipment and barriers around particularly noisy areas of the site or around the entire site;
- Use shields, impervious fences, or other physical sound barriers to inhibit transmission of noise to sensitive receptors;
- Minimize backing movements of equipment where possible;
- Prohibit unnecessary idling of internal combustion engines; and

- 1 • Designate a noise disturbance coordinator who shall be responsible
- 2 for responding to complaints about noise during construction. The
- 3 telephone number of the noise disturbance coordinator shall be
- 4 conspicuously posted at the construction site.

**Table 2-7: Noise Ranges of Typical Construction Equipment**

Construction Equipment	Noise Levels in dBA $L_{eq}$ at 50 feet <sup>1</sup>
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Saws	72-82
Pumps	68-72
Generators	71-83
Compressors	75-87
Back Hoe	73-95
Tractor	77-98
Scraper/Grader	80-93
Drill Rigs	70-85

Notes:

1. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.

Source: U.S. EPA, 1971.

5 In addition to the housing, the nearest receptor, the school in Holt, would be  
6 approximately four and a half miles from the construction site and approximately  
7 two miles from the Holt construction yard. As shown in the table, the maximum  
8 noise levels that could be produced would be 98 dBA from tractors at  
9 approximately 50 feet. Noise from a stationary source attenuates at  
10 approximately 6 dBA per doubling of distance if there are no intervening  
11 structures. Consequently, noise levels at the school would be below 50 dBA  
12 under ideal conditions. This is well within the “acceptable” range for schools, as  
13 shown in the State of California’s General Plan Guidelines. It is highly unlikely  
14 that construction noise would be noticeable at all, since there would most likely  
15 be intervening objects such as trees between the noise source and the school,  
16 and other existing noise sources would obscure the construction noise further.  
17 Although the Holt construction yard would be closer to the school, construction  
18 equipment would only operate here for short periods of time each day. Even at  
19 two miles, noise attenuation would result in the maximum noise levels of  
20 approximately 50 dBA.

As part of the construction process, truck trips would occur during shipping of the new pipeline, as outlined in the Project description. Approximately 92 truck trips are estimated to pass the Holt Union School during this process. High peak noise levels could be generated at the school as these trucks pass. However, the peaks would be of very short duration. San Joaquin County's noise standard for schools is a 24-hour standard. While truck trips could elevate noise for short amounts of time, they would do very little to increase 24-hour noise levels.

A purging procedure would also be involved in the construction process, just prior to bringing the pipeline online. It is possible that this could create elevated, but temporary increases in noise levels. As with the truck trips, this noise could be of short duration and would do little to influence the 24-hour ambient noise levels at either nearby residences or schools. Consequently, noise increases from the purging procedure would not be substantial.

- b. The unobstructed flow of gas through the buried gas pipeline would not be expected to create any perceptible groundborne vibration. Moreover, the pipeline would not be in the vicinity of any receptors that could be affected by any vibration.

Equipment used during construction of the proposed Project would create temporary groundborne vibration. Typical groundborne vibration levels from various pieces of construction equipment are shown in Table 2-8. As shown in the table, at 100 feet away, the highest level of groundborne VdB, would be the 75 VdB generated by bulldozers.

**Table 2-8: Vibration Source Levels for Construction Equipment**

Construction Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998; and EIP Associates, 2005.

The Federal Railway Administration has developed thresholds of significance for groundborne vibration. These standards recognize that VdB levels below 80 VdB are hardly noticeable and would not adversely affect sensitive receptors. As



1 shown in Table 2-8, VdB levels generated by the construction of the proposed  
2 pipeline would be significantly below this 80 VdB threshold at 100 feet. Even  
3 when construction equipment arrives at or departs from the construction yard, at  
4 two miles from the school, VdB levels should not be noticeable. As discussed in  
5 Item 2.3.11a, there is also temporary agricultural housing in the vicinity of part of  
6 the Project that could conceivably be exposed to groundborne vibration during  
7 construction of the proposed Project. As with noise exposure, this would mostly  
8 be a concern during nighttime hours when people are trying to sleep. Only HDD  
9 and hydrostatic testing would occur during nighttime hours which would occur  
10 over a few days. It is not known how much groundborne vibration would occur  
11 as a result of HDD and hydrostatic testing. However, it is unlikely that this  
12 activity would generate as much vibration as the use of impact equipment such  
13 as pile drivers. Any vibration from HDD or hydrostatic testing would be  
14 temporary and limited to only a few consecutive days. Groundborne vibration  
15 would be highly attenuated at the distance to the school, four and a half miles  
16 away.

17 Since operations of the proposed Project would not create any noticeable  
18 groundborne vibration over long periods of time, and Mitigation Measure NOI-a-1  
19 would provide a contact to address noise disturbance, this would be a ***less-than-***  
20 ***significant impact***.

21 c. As discussed in Item 2.3.11a, operations of the proposed Project would not  
22 generate any noticeable noise. Consequently, there would be no permanent  
23 noise increase, and the proposed Project would have ***no impact***.

24 e. The proposed Project is not located within an airport land use plan or within two  
25 miles of a public airport or public use airport. Consequently, the proposed  
26 Project would have ***no impact***.

27 f. A private airstrip is located approximately one half mile north of the proposed  
28 pipeline on Bacon Island. However, the proposed Project would not result in the  
29 construction of new residences or business and this impact is considered to be  
30 ***less than significant***.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
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**2.3.12 POPULATION AND HOUSING.***Would the project:*

- |  |                          |                          |                                     |                                     |
|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**1 Environmental Setting**

2 San Joaquin County has land area of approximately 1,399 square miles, with a  
3 population density of 402 people per square mile (U.S. Census Bureau 2005). The  
4 County experiences development pressure from the San Francisco Bay Area as well as  
5 the Sacramento Area. The influx of new residents in addition to growth from County  
6 residents will result in substantial growth through time. The County aims to provide for  
7 growth in coordination with local cities, while preserving the existing natural and rural  
8 character (San Joaquin County 1992). The 2000 Census estimated the County's  
9 population to be approximately 563,598 with an estimated population of 632,760 in  
10 2003, a growth of 12 percent (U.S. Census Bureau 2005). San Joaquin County's total  
11 population is projected to reach 887,600 residents by the year 2020 (CA Department of  
12 Finance 2005).

1 Contra Costa County had an estimated population of 948,816 as of 2000, with an  
2 estimated population of 1,001,136 in 2003. Contra Costa County is approximately 720  
3 square miles, with a population density of approximately 1,318 persons per square mile  
4 (U.S. Census Bureau 2005). In the Project area, however, population is significantly  
5 lower due to the dominance of agricultural land uses. Contra Costa County's total  
6 population is projected to reach 1.2 million residents by the year 2020 (Association of  
7 Bay Area Governments 2005).

8 The proposed Project would cross a rural area with few houses. An abandoned house  
9 is approximately 375 feet south of the proposed pipeline on Bacon Island near the west  
10 levee. There are two abandoned houses near the east levee on Bacon Island,  
11 approximately 750 and 1750 feet north of the proposed pipeline, respectively.  
12 Additionally, there are temporary housing trailers for farm workers approximately 60 feet  
13 south of the proposed pipeline on McDonald Island.

#### 14 **Regulatory Setting**

##### 15 **Federal**

16 There are no Federal regulations that pertain to population and housing relevant to this  
17 Project.

##### 18 **State**

19 There are no State regulations that pertain to population and housing relevant to this  
20 Project.

##### 21 **Local**

22 San Joaquin General Plan has elements that address population and housing. San  
23 Joaquin County published the "San Joaquin County General Plan 2010 Volume I:  
24 Policies/Implementation" in July 1992. Contra Costa's general plan has no policies or  
25 goals related to population and housing that are relevant to the Project.

#### 26 **Impact Discussion**

- 27 a. Pipeline construction would involve the employment of approximately 80 to 120  
28 workers. When available, local workers would be employed for construction.  
29 Additional construction personnel hired from outside the Project area would

typically include pipeline construction specialists, supervisory personnel, and inspectors who would temporarily relocate to the Project area. The Applicant estimates that 50 to 60 percent of the construction work force would be hired in-state and 20 percent of the workforce would be hired from the local area. Approximate duration of the construction of the pipeline is four to six months.

Project-area population impacts are expected to be short term and proportionally small. The total population change would equal the total number of non-local construction workers, plus any family members accompanying them. Given the brief pipeline construction period (approximately four to six months), family members are not expected to accompany non-local workers. The estimated 40 to 50 percent of the workers who would relocate to the Project area temporarily during construction of the pipeline would not result in substantial population growth.

The purpose of the proposed Project is to create a second pipeline with equivalent capacity compared to the existing 22-inch Line 57B system so that existing gas storage service can be maintained from the MDIGSF in the event of a catastrophic failure on Line 57B. PG&E Gas Standards (design policy) no longer permit the installation of new 22-inch pipelines because they are no longer an industry standard. Material pricing, availability and the need to store and maintain non-standard parts made the 22-inch design uneconomical and impractical. An industry standard 20-inch diameter pipeline would not provide equivalent capacity to the existing 22-inch Line 57B and therefore would not meet the purpose of the Project. The next larger industry standard diameter is 24-inch and 24-inch is the selected diameter for the proposed Line 57C.

The proposed Project would create a redundant facility to ensure reliability of the MDIGSF and would not expand capacity or service to the Bay Area. Project-area population impacts would be short-term, related to workforce. The Project would not result in the direct construction of additional housing units. Therefore, construction of the Project would not induce substantial population growth either directly or indirectly and this impact would be ***less than significant***.

- b, c. Pipeline construction would occur across agricultural lands and would not displace residences or businesses. No impacts on local housing availability are expected during construction or operation. Non-local workers would likely be

1       able to locate temporary housing in the local communities of Stockton and  
2       Brentwood. Because the pipeline construction period for the Project is relatively  
3       short (approximately four to six months) and because most non-local workers  
4       would not bring family members, most workers would likely use temporary  
5       housing such as hotels, motels, apartments, and campgrounds within commuting  
6       distance of the Project area. Assuming that local construction workers  
7       associated with each construction spread would not require housing, up to 40 to  
8       50 living units for the non-local workers may be required. Non-local workers  
9       typically select a variety of temporary housing accommodations, with some  
10      providing their own housing units, i.e., travel trailers or campers. Therefore, **no**  
11      **impacts** related to displacement of existing housing or people, necessitating the  
12      construction of replacement housing elsewhere, would result from the proposed  
13      Project.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
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**2.3.13 PUBLIC SERVICES.**

*Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*

a. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**1 Environmental Setting****2 Law Enforcement**

3 Law enforcement services for the San Joaquin portion of the Project area would be  
4 provided by the San Joaquin Sheriff's Department. The main San Joaquin Sheriff's  
5 Department station is located at 7000 S. Michael N. Canlis Boulevard, in the  
6 unincorporated area of French Camp south of Stockton. There are 124 uniformed  
7 deputies providing Police Patrol Service 24 hours a day, 7 days a week. The deputies  
8 are divided into eight patrol teams, based on the eight designated geographical areas  
9 within the County. These 'beat areas' are staffed around the clock, providing emergency  
10 response capability to citizens in the unincorporated area (San Joaquin County Sheriff's  
11 Department 2005).

1 Proposed Project areas and facilities within Contra Costa County would be covered by  
2 the Contra Costa Sheriff's Department. The Sheriff's Department is located at 210  
3 O'Hara Ave, in the city of Oakley. This station is staffed by 18 full-time officers and is  
4 approximately 10 miles from the Project facilities (CCC Sheriff's Department 2005).

## 5 **Fire Protection**

6 The San Joaquin County portion of the Project is within an area that is not protected by  
7 any regularly organized Fire Department or District, but offered by residents and  
8 landowners. In the event of a structure, vehicle, wild land, or field fire, a Sheriff's Office  
9 Deputy, if available, would be dispatched as a first responder. If the incident is  
10 determined to be life threatening and a fire department has not been called, a mutual  
11 aid request would be made to the nearest Fire District or Department (Orozco 2005).

12 As the nearest adjacent city fire department, mutual aid requests would be reported to  
13 the Stockton Fire Department. The Stockton Fire Department has 12 fire stations  
14 housing 12 engine companies and 3 truck companies serving a service area of over  
15 280,000 residents in an area of about 88 square miles. The Department is divided into  
16 two battalions, with engine and truck companies of four staffing all stations except  
17 Station Number Two, which is staffed by a crew of five. Staffing of 2 battalion chiefs is  
18 maintained 24 hours a day. In addition, the Department has a Hazardous Materials Unit  
19 and a Fire Boat. The Department also maintains adequate personnel for a Water and  
20 Dive Rescue Team, Heavy and Confined Space Rescues and Fire Cause & Origin  
21 Investigations (Stockton Fire Department 2005).

22 The Contra Costa County portion of the Project is served by the East Contra Costa Fire  
23 Protection District, which has nine different stations located throughout this portion of  
24 the county. Stations number 58 and 59 are within the closest proximity to the Project  
25 site, approximately 9 and 7 miles, respectively, and both are staffed by 2 full-time fire  
26 suppression personnel 24 hours a day (East Contra Costa Fire Protection District 2005).

## 27 **Schools**

28 The Project area is served by four school districts: Tracy Joint Unified School District  
29 and Holt Union Elementary School District in San Joaquin County and Brentwood Union  
30 Elementary School District and Liberty Union High School District in Contra Costa  
31 County. Tracy Joint Unified School District has a total of 23 schools, ranging from  
32 grades K through 12. Holt Union Elementary School District has one school, Holt

Elementary School, ranging from grades K through 8. Brentwood Union Elementary School District has a total of eight schools, ranging from grades K through 8. Liberty Union High School has a total of four high schools, ranging from grades 9 through 12 (California Department of Education 2006). The closest school to the Project site is the Holt Elementary School, approximately 4.5 miles southeast of the proposed pipeline.

## **Regulatory Setting**

### **Federal**

There are no Federal regulations that pertain to public services relevant to this Project.

### **State**

There are no State regulations that pertain to public services relevant to this Project.

### **Local**

San Joaquin and Contra Costa Counties have General Plans with elements that address public services. San Joaquin County published the "San Joaquin County General Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County published "Contra Costa County General Plan 1995-2010" in July 1996.

## **Impact Discussion**

a, b. The proposed Project would not result in the construction of new residential units, would not induce growth and would not require the construction of additional fire or police facilities. PG&E's *Gas System Maintenance & Technical Support, Emergency Plan Manual* (2004) would apply to pipeline construction and maintenance activities and includes established guidelines and procedures to be followed in the event of an emergency. The purpose of the plan is to provide procedures and other directives to be carried out in the event of fire, explosion, earthquake, accidental release of hazardous materials or waste, or any similar emergency. When such an emergency occurs, the Plan would be implemented by PG&E's Facility Emergency Coordinator. The plan is annually reviewed with local agencies to ensure that plan design and implementation measures are current and that all personnel understand the plan and their responsibilities. With implementation of this plan, impacts related to fire and police protection service would be considered ***less than significant***.



- 1 c. The proposed Project would not involve residential development and would not  
2 provide individual service to local residents. Given the brief construction period  
3 of approximately four to six months, family members are not expected to  
4 accompany the non-local workers. As a result, no impact to teacher-pupil ratios  
5 is anticipated and no additional school facilities would be required. Therefore, **no**  
6 **impact** would occur to schools.
- 7 d, e. Pipeline construction would occur over the course of approximately four to six  
8 months and would not result in residential development or increased population  
9 resulting from employment opportunities. Further, it is not likely that workers  
10 would bring family members considering the short construction period. The  
11 proposed Project would not require the construction of additional park facilities or  
12 other public facilities within the Project area and **no impact** would occur.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
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**2.3.14 RECREATION.**

- a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
- b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**1 Environmental Setting**

2 The Project area is within the Sacramento-San Joaquin Delta, where the extensive  
3 network of waterways provides abundant recreation opportunities including boating,  
4 fishing, and hunting. Franks Tract State Recreation Area is located in Contra Costa  
5 County between False River and Brannan Island, approximately five miles from the  
6 proposed alignment. This recreation area is a flooded delta island accessible only by  
7 water and is a popular spot for fishing and waterfowl hunting. Additionally, most of the  
8 waterways in the Delta are public, but most of the land is private and the lack of public  
9 access limits recreational use in the Delta. Public use areas are concentrated where  
10 marinas and other facilities provide access to Delta waterways. Additional potential,  
11 publicly-owned recreation sites are available within the Delta and include sites for public  
12 trails, visitor and interpretive centers, and boat landing facilities (Delta Protection  
13 Commission 2005a). San Joaquin County provides public access to the Delta at  
14 Westgate Park and has identified Middle River as a “*Significant Resource Area*” for  
15 recreation (San Joaquin County 1992).

1 The Contra Costa County General Plan recognizes the value of private recreational  
2 development and encourages these projects, if projects include environmental  
3 enhancements. In recognition of the potential partnership between utility corridors and  
4 recreational access and trails, Contra Costa County encourages joint use of utility  
5 pipeline rights-of-way with recreational trails (Contra Costa County 1996). There are no  
6 formally designated recreational trails within the Project area.

7 Many recreational activities in the Delta are associated with boating activities. Most  
8 visitors stay an average of one day (Delta Protection Commission 2005b) and include  
9 local residents as well as tourists and recreation-seeking out-of-towners. Boating  
10 opportunities include day use boat and personal watercraft access, as well as house  
11 boats rentals from local marinas. Local marinas provide a range of facilities and  
12 services including: boat launching facilities, campgrounds, picnic grounds, restaurants,  
13 and bait and tackle shops (Delta Protection Commission 2005b).

14 Privately owned land within the Delta is primarily used for agricultural production.  
15 Conflicts arise between recreational uses and agricultural uses from litter, trespassing,  
16 unauthorized picking of fruit and vegetables, vandalism of agricultural equipment,  
17 and using unsuitable levee roads for access. Bank fishing is a popular activity within  
18 the Delta, although no restroom or garbage facilities are available (Delta Protection  
19 Commission 2005a).

## 20 **Regulatory Setting**

### 21 **Federal**

22 There are no Federal regulations that pertain to recreational resources relevant to this  
23 Project.

### 24 **State**

#### 25 **Delta Protection Act of 1992**

26 The Delta Protection Act requires the Delta Protection Commission to prepare, adopt,  
27 review and maintain a comprehensive, long-range resource management plan in  
28 recognition of the Delta's beneficial uses, including recreation.

**1 Local**

2 San Joaquin and Contra Costa Counties have General Plans with elements that  
3 address recreation. San Joaquin County published the "San Joaquin County General  
4 Plan 2010 Volume I: Policies/Implementation" in July 1992. Contra Costa County  
5 published "Contra Costa County General Plan 1995-2010" in July 1996.

**6 Impact Discussion**

7 a, b. Recreation is designated as one of the Delta's beneficial uses by State and local  
8 governments. Local residents, as well as tourists, enjoy the recreational  
9 opportunities that the diverse network of waterways has to offer. The proposed  
10 Project would be constructed within the Delta Region, and would be located  
11 within the interior of existing private agricultural production lands. The  
12 construction-related workforce, while locally housed temporarily, would likely  
13 consist of individuals directly involved with the pipeline construction. Due to the  
14 short time period for construction, family members would not likely accompany  
15 construction employees. No construction or expansion of recreational facilities is  
16 proposed. The proposed Project would not result in population growth or the  
17 increased use of neighborhood, regional or other recreational facilities such that  
18 substantial physical deterioration of existing facilities would occur or be  
19 accelerated and would not require the expansion of said existing facilities, and  
20 therefore, ***no impact*** would occur.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.15 TRANSPORTATION/TRAFFIC.</b>				
<i>Would the project:</i>				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 1 **Environmental Setting**

Transportation corridors and needs within Contra Costa County are influenced by the County's proximity to the Bay area. Economic and social resources within San Francisco, Alameda and Solano Counties are linked to Contra Costa County via bridges, freeways and trains. San Joaquin County considers its road network the backbone of its transportation system, recognizing the value of the County's three interstate highways and eight State routes for providing connections to other communities (San Joaquin County 1992).

Within the Project area, SR-4 and Interstates 5 (I-5) and 80 (I-80) are the major regional transportation corridors. The access route for the proposed Project consists of Interstates, State highways, local county-maintained roads, levee roads under the jurisdiction of local reclamation districts and private roads. Reclamation District 2030 manages levee roads on McDonald Island, Reclamation District 2038 manages levee roads on Lower Jones Tract, Reclamation District 2028 manages levee roads on Bacon Island and Reclamation District 2024 manages levee roads on Palm Tract. An abandoned private airstrip is located approximately one-half mile north of the proposed pipeline alignment on Bacon Island.

Traffic to McDonald Island from the Holt construction yard would take Holt Road north, and turn left on McDonald Road. Traffic to Lower Jones Tract would follow Whiskey Slough Road north to Lower Jones Road. Traffic to Bacon Island could go one of two ways: (1) Whiskey Slough Road north to Lower Jones Road, and cross the Bacon Island Bridge to Bacon Island Road; or (2) Trapper Road south to Bacon Island Road, to the Bacon Island Bridge. Traffic to Palm Tract would also follow one of two routes – (1) SR-4 west, north on Bixler Road, and then east on Orwood Road and (2) SR-4 west, to Byron Highway north and then east on Orwood Road. Private agricultural roads

1 would be used to access the temporary use areas from the main roads. Figure 2 shows  
2 the access roads.

### 3 **State Route 4**

4 SR-4 extends from I-80 in Contra Costa County to State Route 89 in Alpine County.  
5 The road traverses west to east and is a two-lane road within the Project area and is  
6 maintained by Caltrans District 4 (Caltrans 2005c).

### 7 **Holt Road/Inland Drive/McDonald Road**

8 Holt Road is a two-lane road, extending north-south from west Neugebaur Road in San  
9 Joaquin County to SR-4.

10 Inland Drive is a two-lane road, extending north-south from west House Road to Starke  
11 Drive in San Joaquin County. McDonald Road is a two-lane road extending east-west  
12 from Inland Drive to Holt Road in San Joaquin County.

### 13 **Bacon Island Road/Lower Jones Road**

14 Bacon Island Road, a two-lane road, extends east-west from south Alpine Road to  
15 North Patrick Road in San Joaquin County. Lower Jones Road runs along the  
16 perimeter of Lower Jones Tract on top of the levee system surrounding the island.

### 17 **Bixler Road**

18 Bixler Road traverses along a straight-line north-south course from Byron Tract north to  
19 a pumping station on Werner Dredge Cut.

### 20 **Level of Service**

21 The current level of service (LOS) for county maintained roads within the Project area is  
22 LOS C (Brucker 2005). LOS C can generally be described as a steady flow of traffic  
23 with restricted speed and maneuverability from traffic volume.

### 24 **Regulatory Setting**

#### 25 **Federal**

26 There are no Federal regulations that pertain to transportation relevant to this Project.

1   **State**

2   California Vehicle Code

3   Chapter 2, Article 3 of the California Vehicle Code defines the powers and duties of the  
4   California Highway Patrol, which has enforcement responsibilities for the operation of  
5   vehicles and highway use within the State.

6   California Department of Transportation

7   Caltrans is responsible for the design, construction, maintenance, and operation of the  
8   California State Highway System, as well as that portion of the Interstate Highway  
9   System within the state's boundaries.

10  Delta Protection Act of 1992

11  Surface transportation in the Delta can be dangerous and congested. According to the  
12  Delta Protection Act, roads within the Delta shall be maintained to serve the existing  
13  agricultural uses and supporting commercial uses, recreational users, and Delta  
14  residents. Where possible, commuter traffic and through traffic should be directed to  
15  surrounding highways and freeways, or minimized through programs which promote  
16  carpools, buses or trains.

17  **Local**

18  There are no objectives or goals within the San Joaquin County General Plan or the  
19  Contra Costa General Plan that pertain to transportation and are relevant to this Project.

20  Local Reclamation Districts

21  The local Reclamation Districts maintain the “nonproject” levees and the roads on top of  
22  them in the Delta in accordance with the standards set forth by the DWR and the  
23  Bureau of Reclamation. The proposed pipeline route would cross roads under the  
24  jurisdiction of the local Reclamation Districts 2030, 2038, 2028, and 2024.

25  **Impact Discussion**

26  a, b. Traffic patterns within the Project area are related to existing agricultural  
27  operations, the MDIGSF, and recreational uses within the Delta. Project-related  
28  traffic would involve the transportation of workers, equipment and pipe to the



1 construction site over a short-term period of approximately four to six months.  
2 Pipeline construction work would typically be scheduled to run from early  
3 morning to early afternoon so that most workers commute to and from the sites in  
4 off-peak hours. The movement of construction equipment and materials from the  
5 Holt construction yard to the Project site would result in short-term impacts on the  
6 transportation network, but would not result in significant increases in volume or  
7 congestion.

8 Access roads for the proposed Project consist of interstates, State highways,  
9 local county-maintained roads, levee roads under the jurisdiction of the local  
10 reclamation districts and private roads. Equipment and construction workers  
11 would be transported to the Holt construction yard via I-5 and SR-4. Access to  
12 and from the Holt construction yard and the proposed alignment would occur via  
13 local roads, including Holt Road, McDonald Road, Whiskey Slough Road, Lower  
14 Jones Road, Bacon Island Road, Trapper Road, Bixler Road, Orwood Road, and  
15 Byron Highway.

16 Transporting the required amount of pipe over bridges with an 80,000 pound  
17 weight capacity would result in the following numbers of truck trips from the Holt  
18 construction yard or commercial coating yard to the various construction sites:

- 19 • 92 trips to McDonald Island;
- 20 • 12 truck trips to Lower Jones Tract;
- 21 • 89 truck trips to Bacon Island; and
- 22 • 2 truck trips to Palm Tract.

23 Several construction-related trips would be made each day (to and from the job  
24 site) on the pipeline spread. This level of traffic would remain fairly constant  
25 throughout the construction period, and would also typically occur at off-peak  
26 hours in the early morning and early afternoon. Truck traffic associated with pipe  
27 hauling would be the most significant aspect of potential traffic impacts, but  
28 would only occur during the pipe-stringing phase of pipeline construction. The  
29 proposed Project would not create a substantial increase in traffic or exceed  
30 established level of service standards, therefore; impacts are considered **less**  
31 **than significant**.

- c. The proposed Project would not result in any changes to air traffic patterns. No public airports are located within the vicinity of the Project area. An abandoned private airstrip is located within the vicinity of the Project. However, this airstrip was likely related to existing agricultural operations, and Project development would have no impact on this airstrip or any public airstrip or airway. Routine aerial pipeline route inspections would be completed according to all pertinent Federal regulations relating to air traffic. Because the proposed Project would not affect air traffic patterns, **no impact** would occur.
- d. Construction under all paved levee roads and levees would occur concurrently with the major water crossings via HDD technique. Other field access roads and driveways would be crossed by trenching across the road (open-cut crossing). Open trenches in agricultural fields would not be fenced but signs would be placed along access roads. Access to all driveways would be generally maintained with any disruption not lasting more than four hours. All access roads would be re-graded and restored in a manner similar to the pipeline right-of-way, unless the property owner requests the road to remain as is. No new access roads would be required for pipeline operation and maintenance. Because the proposed Project would not involve the development of public access roads or the realignment of any existing roads, impacts are considered **less than significant**.
- e. Project area roads currently provide adequate emergency access within the Project area to serve agricultural operations as well as the MDIGSF. Project development and maintenance would not adversely impact access routes within the Project area and would not involve the construction or realignment of additional public access routes; therefore impacts are considered **less than significant**.
- f. Parking for Project workers, inspectors and equipment would be adequately accommodated within the Holt construction yard and the 150-foot construction right-of-way. It is likely that Project construction workers would park personal vehicles in the Holt yard and carpool to the construction site in company vehicles staged at the yard. Parking would only be necessary for construction workers during pipeline construction, which is scheduled to be completed within four to six months. The proposed Project would not result in a land use that would create a

1 demand for parking through the development of retail, residential, recreational or  
2 public use facilities; therefore, impacts are considered ***less than significant***.

- 3 g. Alternative transportation modes within the Project area would not be adversely  
4 affected by Project development and maintenance. The Project area primarily  
5 consists of private agricultural lands and Delta waterways. Project access would  
6 be provided via existing levee roads and through the enhancement of access  
7 roads within private agricultural lands. Construction traffic on local roads would  
8 cease following completion of pipeline construction, currently estimated to be  
9 completed within a period of approximately four to six months. There are no  
10 adopted alternative transportation plans covering the Project area. Impacts are  
11 considered ***less than significant***.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.16 UTILITIES AND SERVICE SYSTEMS.</b>				
<i>Would the project:</i>				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
f. Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Comply with Federal, state, and local statutes, and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## 1 **Environmental Setting**

## 2 **Water and Wastewater**

3 Water supply in San Joaquin County is provided from ground and surface water  
4 supplies by water agencies including cities, public districts and quasi-public agencies.  
5 Rural areas generally rely on wells and all urban areas have public water systems with  
6 the exception of French Camp (San Joaquin County 1992).

7 In Contra Costa County, municipal water supplies are provided by East Bay Municipal  
8 Utility District (EBMUD) and Contra Costa Water District (CCWD) (Contra Costa County  
9 1996). EBMUD provides service to the urban western and central county from Pardee  
10 Reservoir, located on the Mokelumne River. CCWD provides service to the remainder  
11 of the County and provides untreated water to the cities of Antioch, Pittsburg and  
12 Martinez, as well as the Oakley Water District and Bay Point, a private company.  
13 CCWD provides treated water to the cities of Concord, Pleasant Hill, Walnut Creek, and  
14 Clayton (San Joaquin County 1992).

15 The Project area is not located within any established water or wastewater service area.  
16 Most of the surrounding Delta region uses septic tanks and relies on wells for domestic  
17 water use (San Joaquin County 1992).

18 Water needs for Project construction would include water for dust control and  
19 approximately 1,175,000 gallons for hydrostatic testing of the pipeline. The McDonald  
20 and Bacon Island land owners own the agrarian rights to all the water that is proposed

for use. In addition, the town of Discovery Bay has indicated that it could serve as another water source, if necessary.

All discharges from hydrostatic testing would be required to comply with Waste Discharge Requirements as specified by the State Water Resources Control Board. Related relevant information pertaining to water resources can also be found within Section 2.3.8, Hydrology and Water Quality.

## **Solid Waste**

Solid waste disposal for the Project area in San Joaquin is located at the North County Recycling Center and Sanitary Landfill in Lodi approximately 27 miles from the proposed Holt yard (CIWMB 2005a and Mapquest 2005). North County Recycling Center and Sanitary Landfill is a Class III facility with a permitted capacity of approximately 17,000,000 cubic yards and a remaining capacity of approximately 13,239,000 cubic yards (CIWMB 2005a). The facility accepts agricultural, industrial, mixed municipal, construction and demolition wastes as well as tires, metal and wood waste (CIWMB 2005a). North County Recycling Center and Sanitary landfill is permitted through the year 2035 (CIWMB 2005a).

## **Federal**

### U.S. Department of Transportation (DOT)

The U.S. DOT establishes the "Transportation of Natural Gas by Pipeline: Minimum Federal Safety Standards" as required in 49 CFR 192. These standards specify minimum safety requirements for pipeline facilities and the transportation of gas via pipeline.

## **State**

### Delta Protection Act

The Delta Protection Act created the Delta Protection Commission, which adopted the following regulations relative to utilities in the Delta (14 CCR).

#### **Section 20050: Utilities and Infrastructure**

- a) Impacts associated with construction of transmission lines and utilities can be mitigated by locating new construction in existing utility or transportation

corridors, or along property lines, and by minimizing construction impacts. Before new transmission lines are constructed, the utility should determine if an existing line has available capacity. To minimize impacts on agricultural practices, utility lines shall follow edges of fields. Pipelines in utility corridors or existing rights-of-way shall be buried to avoid adverse impacts to terrestrial wildlife. Pipelines crossing agricultural areas shall be buried deep enough to avoid conflicts with normal agricultural or construction activities. Utilities shall be designed and constructed to minimize any detrimental effect on levee integrity or maintenance.

## **Impact Discussion**

a, b, e. The proposed Project would not result in the construction of new homes or new businesses that would create wastewater. Water used for hydrostatic testing and ditch dewatering would be discharged in compliance with standards defined by the CVRWQCB and not to a wastewater treatment facility. Because the water would not be treated at a wastewater treatment facility, it would not require the construction, expansion, or improvement of any wastewater facility nor would it exceed the requirements of the CVRWQCB. Therefore, ***no impact*** would occur.

c. The only increase in impervious surfaces caused by the proposed Project would be the construction of the 30-foot by 30-foot valve lot on Palm Tract and the McDonald Island Valve Lot expansion, both of which would not require storm water drainage facilities. The Applicant does not propose surfacing the Holt construction yard and the pipeline route would be returned to agricultural operations following Project completion. Project development would not result in the need for expansion of stormwater facilities or construction of additional facilities and ***no impact*** would occur.

d. The proposed Project would require water for dust control and hydrostatic testing of the pipeline following construction. The Applicant has indicated that hydrostatic testing would require approximately 1,175,000 gallons of water. Landowners on McDonald and Bacon Islands own the agrarian rights to all water that is proposed for use for hydrostatic testing. The town of Discovery Bay has also indicated that it could serve as a potential hydrotest water source. Water supply resources currently exist to meet Project demands and no new entitlements or supply would be required. Therefore, impacts related to water supply are considered ***less than significant***.

1 f, g. Solid waste from Project construction would be hauled to North County Recycling  
2 Center and Sanitary Landfill, which is approximately 27 miles from the Project  
3 area. The facility is permitted through 2035 and accepts agricultural,  
4 construction/demolition, and industrial wastes as well as metals, wood waste and  
5 other waste types. The facility has a remaining capacity of approximately  
6 13,239,000 cubic yards (CIWMB 2005c). Construction waste and debris would  
7 be cleaned up and appropriately disposed of as construction progresses and  
8 following Project completion. The exact amount of solid waste that would be  
9 generated from Project construction has not been estimated at this time, but it  
10 would include of bore cuttings and excess drilling fluid. This material would be  
11 disposed of on land in accordance with the CVRWQCB Waiver of Specific Types  
12 of Discharges under Resolution R5-2003-0008. Additional solid waste would be  
13 minimal and disposed of at the North County Recycling Center and Sanitary  
14 Landfill. The proposed Project would not generate solid waste during operation,  
15 but there could be some inert debris generated during construction. Overall, the  
16 amount of solid waste generated by the proposed Project would be minimal and  
17 temporary and would not substantially affect landfill capacity or be disposed in a  
18 manner inconsistent with any ordinances or regulations. Therefore, this impact  
19 would be ***less than significant***.



Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
<b>2.3.17 MANDATORY FINDINGS OF SIGNIFICANCE.</b>				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## **Impact Discussion**

a. As discussed in the sections above, impacts on biological and cultural resources could occur through the development of the proposed Project. However, Mitigation Measures BIO-a, b-1 through BIO-e, f-1, and Mitigation Measures CUL-b-1 through CUL-d-1 would reduce impacts on biological resources and cultural resources, respectively, to ***less than significant levels, with mitigation incorporated.***

b. The proposed Project would provide a redundant natural gas pipeline, in a portion of the Sacramento-San Joaquin Delta. The analysis of potential cumulative impacts was limited to an approximately one-mile-wide corridor centered on the proposed alignment for the length of the Project. The proposed Project would cross lands in San Joaquin County currently subject to Williamson Act contracts, which would prohibit the conversion of the property to non-agricultural uses. In Contra Costa County, the proposed Project would cross lands covered under a conservation easement that prohibits development, in perpetuity.

Because impacts of the proposed Project would be less than significant with mitigation as described in the previous sections and no other projects are likely to occur within the area analyzed, cumulative impacts would be considered ***less than significant with mitigation incorporated.***

c. As discussed in the sections above, the proposed Project would not result in a significant impact due to the transport, use, or disposal of hazardous materials. Impacts from natural hazards that could endanger residents adjacent to the Project site, such as ground shaking and flooding would be reduced to less-than-significant levels through the implementation of Mitigation Measures GEO-a (i, ii)-1 through GEO-c-2. Implementation of Mitigation Measure AIR-a, b-1 would reduce potential construction-related air quality impacts and Mitigation Measure NOI-a-1 would reduce potential construction-related noise impacts to less-than-significant levels. The proposed Project is not anticipated to result in substantial effects on humans and therefore, this impact is considered to be ***less than significant with mitigation incorporated.***